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ABSTRACT

This investigation of a methodology for evaluating the reference effectiveness of academic libraries in New South Wales tests the answering of questions with a set of 10 questions seeking general background information on a range of topics. Student volunteers pose the questions by unobtrusive methods to reference staff at three college libraries. The results, while precluding generalization because of small sample size, indicate there is a 50 percent chance of receiving a satisfactory reply. Factors affecting the results include the education and training of the librarians, and, to a lesser extent, the collection content. The study recommends extension of the study and further investigation of relevant factors. A bibliography of 47 references is included. (Author/RAA)

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EVALUATION OF REFERENCE SERVICE IN COLLEGE OF ADVANCED EDUCATION LIBRARIES IN NEW SOUTH WALES

by

Janine Betty Schmidt

A project report submitted in partial fulfillment of the requirements of the Degree of Master of Librarianship, 1979.

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SUMMARY

This study investigated a methodology for evaluating the reference effectiveness of Colleges of Advanced Education libraries in New South Wales. One aspect of reference service, the answering of questions, is chosen for investigation. Ten question seeking general background information about topics ranging from kinesthesis to health facilities in Australia were designed, most of them modelled on questions which had been asked in College library. These questions were asked in person by student volunteers at three College libraries in Sydney. The methods used were unobtrusive. The reference staff in the libraries were unaware that their performance was being assessed. The results indicated that students asking these ten questions at these three libraries may have a fifty percent chance of receiving a satisfactory reply. The size of the sample precludes any generalization from these results. The factors affecting the supply of the answer to the questions were also investigated. The contents of the library collection were found to be of less importance than other factors, which included the education and training of librarians. The study should be repeated in a larger number of libraries to test and extend these results, and further investigation of the factors involved needs to be carried out.

I. INTRODUCTION

A. Need for the study and statement of the problem

Education in Australia has undergone many changes in the last few years. The structure of the tertiary education commissions which make policy and funding recommendations to the federal government has been changed. Funding for education generally has become increasingly uncertain, especially with the disruption of triennial funding. Government inquiry into education at state and federal levels has increased, along with public concern about the cost-effectiveness of education. All these factors affect Colleges of Advanced Education in New South Wales.

A great deal of attention has been paid to the evaluation of various types of library services in recent years. New methods and techniques of evaluation have been used, and many different aspects of library service have been examined. One aspect of library service which has been the subject of scrutiny is the reference service, which can be defined simply as the process of answering questions. This process is an extremely complicated one, and influenced by many factors.

There are therefore three strands to this investigation. There are the Colleges of Advanced Education in New South Wales and their libraries. There are the techniques being used to evaluate libraries, and in particular those being used to examine one branch of library services,

the reference service. Finally, there are the factors contributing to the effective performance of the reference service.

This study examines three College libraries in New South Wales, to determine the probability of receiving a satisfactory reply to a question seeking information within that library. The study used one particular method for doing this. The questions were asked in person by volunteer students without the knowledge of the reference staff whose actions were being observed. The study also investigates the reasons for failure.

B. Context of the study

It is only in the last fifteen years that Colleges of Advanced Education have been established as part of the tertiary education sector within Australia. The Commonwealth Advisory Committee on Advanced Education was established in 1965 following the Martin report,[1] and since that date approximately ninety Colleges of Advanced Education have been established in Australia, twenty-three of them in New South Wales. Many of these grew from teachers' colleges which were already in operation, or

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1. Australia. Committee on the Future of Tertiary Education in Australia. Tertiary education in Australia; report to the Australian Universities Commission. 3 vols. (Canberra,1964-65).

were formed by amalgamations of various existing educational institutions. The Colleges experienced sudden rapid growth.

The libraries in these institutions have encountered many problems in attempting to provide service. Funds increased after the establishment of the libraries, and unmatched grants enhanced the contents of the library collections. Despite these improvements, College budgets have been low compared with those of the universities, collections tend to be small, and inadequate to the Colleges' teaching responsibilities, and library staff numbers are minimal. Increased student numbers, new methods of teaching, a wider variety of the formats of information resources required, and rising costs have added to the problems of undernourishment. The libraries within the Colleges still find themselves providing services with little back up and support.

It is therefore within a framework of impoverishment that the Colleges have been providing service. Few attempts have been made to evaluate the services offered by the libraries to establish if they meet the needs of the clientele - the students and staff. Cooperation in networks has been suggested as a device by which the College libraries could derive economies of scale in their operations.[2] To decide whether networks, or any other

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2. J.L. Ward and A.J. Brown. "Libraries in Colleges of Advanced Education"in H. Bryan and G.Greenwood eds. Design for diversity; library services for higher education and research in Australia. (St.Lucia, Q'land, University of Queensland Press, 1977) pp.143-146

strategies, are likely to improve College libraries is difficult, because so little is known about the effectiveness of existing operations.

Therefore, the existing situation should be examined, any problems revealed and analyzed, and possible solutions suggested. Evaluation should be a tool for testing the effectiveness of a library's operations and should postulate possible improvements to rectify deficiencies.

Interest in evaluation within libraries has burgeoned over the last few years. Goldhor[3] has said that the evaluation of library services and the highlighting of adequacies and inadequacies in present performance will hasten re-evaluation of the scope and mission of libraries. Libraries need to examine what they are doing for the achievement of their objectives to decide if present activities require changing. The growing financial pressures on libraries in recent years have led to increased interest in techniques of evaluation. There has been a swing from the use of measurements of "inputs" into library systems, such as statistical measures of staff numbers, budgets and collection sizes, to the use of measurements of "outputs" of library systems.

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3. Foreword to F.W. Lancaster. The Measurement and Evaluation of Library services. (Washington, D.C., Information Resources Press, 1977) p. vii-viii

De Prospo[4] and others have stressed the importance of measuring library performance. Lancaster has summarized the current approach to evaluation.

> A library exists as an interface between a particular user population and the universe of bibliographic resources. The objective of the library is to maximize the exposure of the user to the resources. In addition, the library should be organized to minimize the amount of effort required to obtain access to needed bibliographic materials, and to supply such materials as soon as possible when the need for them arises. The effectiveness of any library can be evaluated in terms of how well it satisfies these objectives.[5]

The views propounded on the objectives of College of Advanced Education libraries are examined in some detail in Chapter II, Review of the Literature. A detailed review is also made of the literature on the evaluation of reference service, in the course of which emerge a range of assumptions made about the reference

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4. E.R. De Prospo and others. Performance measures for public libraries. (Chicago, Public Library Association, 1973).

5. Lancaster, p.8.

process. This process is complex, and an attempt is then made to identify the factors which affect its outcome. One of the factors given special attention is the education and training of librarians.

II. DEFINITION OF TERMS.

In order that the literature survey might be readily comprehensible, it is necessary to set up definitions of some of the terms most commonly used in the literature and throughout this study. Other definitions will be supplied as the terms occur.

Reader Services.

None of the glossaries or dictionaries of librarianship defines "Reader Services", although the term is frequently used in the literature of librarianship. Library operations have traditionally been divided into "Technical Services" and "Reader Services". "Technical Services" appears to include cataloguing and acquisitions, and "Reader Services" the remainder of library operations. Whyte[6] has equated "Reader Services" with direct service to readers, the reference and lending departments of libraries falling within this ambit. "Reader Services" seems to be the all embracing term used to describe those activities of the library which comprise the circulation of materials, the supply of interlibrary loans, reader education, reference service and photocopying.

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6. J.P. Whyte "Direct service to readers" in Bryan and Greenwood. p.271.

Reference service

"Reference service" is one subset of activities carried out within the general framework of reader services. It is also referred to as "reference work" or "information service". The Encyclopedia of library and information science states:-

> Reference service is most often defined as direct, personal assistance to readers seeking information ... It may range from a minimal level of aid to users in locating their own information ... to the actual delivery of information to clients.[7]

In January 1976, the Reference and Adult Service Division of the American Library Association adopted some developmental guidelines in a commitment to information services. These guidelines defined "reference service" as:-

> Personal assistance provided to users in pursuit of information. The character and extent of such services will vary ... This service may range from answering an apparently simple query to supplying information based on a bibliographical search combining the library/information specialist's competence in information handling techniques with competence in

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7. T.J. Galvin. "Reference services and libraries" in Encyclopedia of library and information science. (N.Y. Dekker, 1978) vol. 25, p.210

> the subject of inquiry. The feature... is to provide an end-product in terms of information sought by the user.[8]

The guidelines included a list of activities of which "reference service" consists. These were answers to specific questions, instruction in the use of the catalogue and reference resources, (such as dictionaries and indexing services), bibliographic verification of terms sought (including assistance in locating library material), interlibrary loan service, compilation of bibliographies, current awareness services, correspondence, document services, and instructional services. This study concentrates on the first of these, the supplying of answers to questions. "Reference service" as it has been used in much of the literature frequently refers to only this activity.

Reference collection.

Reference books, reference materials and reference collection are used interchangeably in the literature. The A.L.A. glossary defines "reference book" as :

> a book designed by its arrangement and treatment to be consulted for definite terms of information rather than to be read consecutively.[9]

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8. "A commitment to information services: developmental guidelines" RQ vol. 15, 1976, p.327.
9. A.L.A. glossary of library terms (Chicago, American Library Association, 1943) p.112.

The Encyclopedia of library and information science lists the following types of reference books - bibliographies, dictionaries, encyclopaedias, yearbooks, manuals, biographical sources, indexes, serials, handbooks, directories and geographical sources.[10] The "reference collection is

> a collection of books and other materials in a library useful for supplying information, kept together for convenience and generally not allowed to circulate[11]

Reference process

This term is frequently used in the literature, but rarely defined. "Reference process" denotes the chain of activities which is set in train once a user of a library verbalizes an information need by asking a question. It includes many activities. There is question negotiation, question analysis, search strategy and answer selection. The "reference process" begins with the receipt of an inquiry and concludes with the supply of the answer. Rees expressed a definition as

> "The reference process incorporates the sum total of variables involved in the performance of reference work by an intermediary designated as reference librarian[12]

The term "reference process will be further discussed in the survey of the literature.

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10. L.Shores and R.Krzys."Reference books", in Encyclopedia of library and information service, vol.25, p.152
11. A.L.A. glossary, p.112
12. A.M.Rees "Broadening the spectrum" in W.B.Linderman. The present status and future prospects of reference/ information service, proceedings of the conference held at the School of Library Service,Columbia University, 1966.(Chicago,American Library Association,1967)pp.57-8.

III. REVIEW OF THE LITERATURE

In order to set up the framework in which this study has been carried out, it is necessary to review in some detail the literature relating to college of Advanced Education libraries. It is also necessary to review in some depth the literature relating to the evaluation of reference service. The final section of this chapter is devoted to an examination of the literature on the reference process. Various models are presented and from these will be extracted later in the study the factors which can be acknowledged to affect the reference process and therefore reference service.

A. COLLEGES OF ADVANCED EDUCATION IN NEW SOUTH WALES.

1. Goals and aspirations of the Colleges.

The effectiveness of library services are usually judged against the achievement of their goals and objectives. The Colleges of Advanced Education are still uncertain about their objectives and role.[13] The libraries within these institutions have therefore found it difficult to formulate goals and objectives. There has been considerable work done on the establishment of standards[14] but these have rarely been related to the goals of the institutions.

Many of the newly formed Colleges called their libraries "Resources centres", stressing the wide range of information formats provided within the libraries, and the production of non-book materials. Some annual reports of the Colleges do indicate aims and objectives of the libraries, but most of the literature reveals functions of the Colleges - what they are trying to do and how, rather than why. An examination of the various reports of the bodies funding the Colleges does reveal some of the goals and aspirations of library services.

The first report of the Commonwealth Advisory Committee on Advanced Education[15] stressed the importance

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13. J.L. Ward and A.J. Brown. "Libraries in Colleges of Advanced Education", in Bryan and Greenwood, p.117.
14. Australia. Commission on advanced Education Third Report, 1973/75 (Canberra, A.G.P.S. 1972 pp. 59-60, paragraphs 5.13 - 5.16.
15. Australia. Commonwealth Advisory Committee on Advanced Education. First Report 1967/69. (Canberra, Goverment Printing Office, 1966).

of libraries within the College structure, and saw the role of the library as being very much part of the total teaching process within the institution. The second report also stressed this aspect and stated:-

> Ultimately the library is primarily concerned with providing means for individual study by the student in his own time, and at his own pace, in such a way that his interest is stimulated and he becomes self-disciplined.[16]

The library would be part of the teaching process by facilitating individual study. The third report of the Committee, issued under its new name of the Commission on Advanced Education again reiterated the centrality of the library within the College.[17]

Bryan and Hean[18] in their research into the function of the library in a College of Advanced Education said that the main objective of the library was to make a positive contribution to the learning-teaching process. The library's central role was to participate in this process. The fourth report of the Commission of Advanced Education took this a little further:

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16. Australia. Commonwealth Advisory Committee on Advanced Education. Second Report, 1970/72 (Canberra, Government Printing Office 1969) p.63, paragraph 7.26.
17. Australia. Commission on Advanced Education. Third report.
18. H. Bryan and E.L. Hean. The function of the Library in a College of Advanced Education. (Sydney, 1970).

> There has been a shift in emphasis from face-to-face teaching towards methods which involve greater use of library facilities. This shift can be effective only if students have access to adequate library materials and if library and teaching staff make the library an integral part of a college's education programme.[19]

The role of the library as an active participant in the teaching process has therefore constantly been stressed.

It is doubtful whether this has been carried out in practice - and indeed how is the library to participate effectively in the teaching process. Is the library merely to provide the materials, or should it actively promote the use of materials.

> College libraries can offer what could be characterised as passive reader services to support a traditional lecture-oriented program. More desirably, the teaching and library environments can be very considerably merged, with the teacher meeting his students in intimate association with their study materials and well-qualified library staff continuing and extending this process with individual students or groups.[20]

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19. Australia. Commission on Advanced Education. Fourth report, 1976/78) (Canberra, A.G.P.S.,1975) p.39, Paragraph 5.37.
20. Australia. Commission on Advanced Education. Third report. p.58, Paragraph 5.11.

Bryan and Hean saw the improvement of reader services as an important step in fulfilling the library's contribution to the teaching-learning process.

> The educational role of the library will necessitate professional staff increases to this (reader services) area, of an order not previously contemplated, for on these librarians will fall the chief responsibility of helping equip students with adaptability and the ability to continue self-learning for the rest of their lives. It will be the reader services area of the library, which, in its staffing and the educational functions it performs, will reflect the revolution in the learning-teaching process in the C.A.E's.[21]

Stress has therefore been placed on reader services as providing the key to the implementation of the central role of the library. Some claims have been made for the type of reader services being provided.

Whyte[22] has said that the C.A.E's have a more receptive attitude towards reader service to students than some of the universities, and are keen to teach students the use of the library. Programmes of reader education and library instruction have sprouted in educational institutions all over the country.

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21. Bryan and Hean, p.125.
22. J.P. Whyte "Direct service to readers" in Bryan and Greenwood. pp.293-5.

Page[23] has drawn attention to some of the high points and deficiencies of these programmes, and feels that students need to be taught how to use information rather than how to use the library. Walker has also said that

> The most effective reader education work is done when a librarian who is a competent professional shows a reader, who is highly motivated because of a current need, how to find information in the library.[24]

To smmarize, the primary goal of Colleges of Advanced Education libraries is perceived in the literature as the support of the teaching programmes within the Colleges. The library has been recognized as an integral part of the Colleges' teaching activities. In achieving this goal, the College libraries have aspired to the provision of active reader services, mainly through the supply of individual reference service to readers, stressing in many instances an instructional approach.

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23. S.B. Page "The library as educator" in Bryan and Greenwood, pp.313-344.

24. A. Walker. Reader education at the University of New South Wales. (Background paper prepared for the Hobart Seminar on Reader Education).

2. Evaluation of College Libraries.

Although one of the central tasks carried out by the College libraries in pursuit of their goals of participating in the educational process has been the provision of reader services, there has been little evaluation of this part of their activities. Two recent reports have examined College libraries.

Maguire and Peake[25] have examined the cataloguing requirements of libraries in Colleges of Advanced Education in New South Wales. Their report found that the processing systems used in most libraries were manual, and that the procedures varied considerably from library to library although the collections and bibliographic tools and techniques were similar. They recommended the establishment of a cooperative network College Libraries Activities Network in New South Wales (CLANN) with two major objectives

1. To reduce the rise in per unit library cost
2. To achieve greater resource sharing

The recommendations of this report were accepted and CLANN has now been established. This development will also affect the provision of reader service in College libraries in the future.

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25. C. Maguire and D.G. Peake. Report on investigation of the cataloguing requirements of New South Wales College of Advanced Education libraries; prepared on behalf of Unisearch Ltd. for New South Wales Higher Education Board (Sydney, 1976).

The second report by Wainwright and Dean[26] has examined the adequacy of the collections in College libraries. Maguire and Peake pointed out that a serious limitation in their study had been the lack of data from users about their requirements from cataloguing systems within the colleges, and that only one of the colleges had carried out any surveys of library use. Wainwright and Dean drew attention to the inadequacy of library collections and attempted to lay down standards for improvement. They found serious deficiencies in the quality of the Library collections in Colleges of Advanced Education as well as in the quantity. One of the reasons for this was the lack of sufficient well-educated library staff in reader services caused perhaps by an overconcentration of staff on the technical services operations. This seems to indicate that the Colleges' aspirations about reader services are not being attained.

At the same time, this report also pointed out that the collections in existence were not being sufficiently utilized.

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26. E.J. Wainwright and J.E. Dean Measures of adequacy for library collections in Australian Colleges of Advanced Education, report of a research project conducted on behalf of the Commission on Advanced Education. 2 vols. (Perth, Western Australian Institute of Technology, 1976).

> If the rate of input to a collection is inadequate, then the collection will remain inadequate, regardless of the efforts and expertise of the library staff ... Nevertheless we consider that not enough attention has been given by librarians to maximizing the utility of the items which they acquire for their collections.[27]

One way of maximizing the use of the library collection is through the provision of services to readers. An evaluation of reader services currently being offered within College libraries may point the way to possible improvements, and greater utilization of library collections.

A study of the literature so far has produced some identifiable goals of library service within College libraries. The provision of reader services within the libraries has been seen as one of the major methods of achieving these goals. However, there has been little evaluation of the services being supplied to users.

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27. Wainwright and Dean, vol. 1, p.210.

B. EVALUATION OF REFERENCE SERVICE.

1. General methods of evaluation.

Rothstein[28] was one of the first to review the literature on the evaluation of reference service. In 1964, he found that most of the evaluation had been statistical or quantitative - it had been measurement rather than evaluation. He found seven types of measurement or evaluation had been carried out. These were:-

1. Gross count of reference questions answered
2. Classification of reference questions by time taken, by type of information sought, e.g. directional questions or ready reference, by subject, by purpose served, by originating source, by materials served and by effect.
3. Analysis of information seekers by occupation, sex, education, age. Attempts had also been made to seek satisfaction levels.
4. Reference collection, by checking against standard lists.
5. Reference personnel and organization of reference department. Most of this had been quantitative - numbers of staff, their duties etc.
6. Cost analyses. Some surveys had investigated the cost of answering a reference question.
7. Evaluation of reference service against goals of the service.

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28. S.Rothstein "The measurement and evaluation of reference service". Library Trends vol.12, 1964, pp.456-72.

Little of this type of evaluation had been carried out in 1964.

Most evaluation or measurement had been centred around the answering of questions. In examining effectiveness of the services provided, Rothstein found that most librarians claimed very high success rates, varying from 88% - 99.71%. Information seekers also gave high levels of satisfaction with the services provided. He concluded that at that time the contribution of reference librarians to library service was probably being underestimated because of failure on the part of the librarians to assess that contribution.

Ten years later, Weech[29] in another review of the literature on the evaluation of adult reference service, pointed out that the examination of reference service had changed little - measurement was still the keynote rather than evaluation. However, he was also of the opinion that the need for establishing goals and objectives of reference service had been recognized. This would in future provide the basis for evaluation studies. Much of the measurement being carried out fell into the categories already identified by Rothstein. Many libraries kept gross counts of questions answered. Classification of questions continued, with some consensus gradually being obtained on types of questions.

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29. T.L.Weech "Evaluation of adult reference service" Library Trends vol.22, 1974, pp.315-335.

One study[30] attempted to categorize the answers to questions.

During this period, the value of reference statistics as the sole measurement of reference effectiveness was being called into question. Users of the reference services continued to be analyzed. While high success rates were still reported, one study in the Syracuse University Library[31] showed that 65% of those persons with questions would not ask for assistance from the library staff. Reference collections were also analyzed, and the characteristics and activities of reference librarians recorded. Bunge[32] found that professionally trained librarians and non-trained library staff answered questions equally correctly, but that trained librarians were able to answer them more quickly. Several studies[33] have also established that student assistants can be used to answer questions effectively in academic libraries. These results seem to indicate an inadequacy in the methods of educating and training librarians, a point which will be addressed later in this study.

Evaluation methods have continued to analyse the

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30. C.E. Hieber. An Analysis of Questions and Answers in Libraries. (Studies in the Man-system Interface in Libraries, Report No.1). (Bethlehem P.A. Center for the Information Sciences, Lehigh University,June 1966)
31. M.J. Swope and J. Katzer. "The Silent Majority: Why Don"t They Ask Questions?" RQ vol.12,1971 pp.161-66.
32. C.A. Bunge. Professional education and reference efficiency (Springfield, Illinois, Illinois State Library, 1967).
33. A.P. Young. "A report and a challenge; student assistant" RQ vol.9, 1970, pp.295-7.

costs of reference service being provided. In 1974, the Reference Services Division of the American Library Association was still unable to agree on standards of reference service. Weech identified unobtrusive testing of reference performance as the latest trend in reference service evaluation. Wherever this technique had been used, a great gap in the quality of the reference service had been revealed. The findings of studies using this method brought into question previous results recording high levels of satisfaction and success. Despite the ethical issues involved in using unobtrusive testing, it had considerable possibilities. The literature on unobtrusive testing of reference service will be considered separately in this study. Weech concluded that evaluation of reference service still required considerable investigation.

Lancaster's[34] recent summary of the state of the art of evaluation of library services in general brings up to date the literature on the evaluation of reference service. In viewing evaluation, he lists performance criteria as the basis for evaluation within the library. He examines library services from the traditional bifurcated library organization structure, Technical Services and Public (or Reader Services, and suggests various criteria which can be examined in an evaluation of the effectiveness of these services.

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34. F.W. Lancaster. The measurement and evaluation of library services. (Washington, D.C. Information Resources Press, 1977).

Some of these in Reader Services are:-

Service	Criteria.
Reference and retrieval	Completeness, accuracy and percentage success can be used to judge quality
Effort to use	Location of Library, Physical accessibility of collection, assistance from staff can be used to judge cost.

Lancaster has pointed out that effectiveness must be measured in terms of how well a service satisfies the demands placed upon it by its users. The quality of reference service should be judged by how completely, accurately and efficiently user demands are satisfied, and this depends on

(a) the collection and

(b) the ability of the staff to exploit the collection.

Lancaster[35] identified two aspects of evaluation of reference service - macroevaluation and microevaluation. Macroevaluation requires five types of data.

1. Total number of questions received
2. the proportion of these attempted
3. the proportion of attempted questions for which answers are supplied
4. the proportion of the answered questions which are answered correctly
5. the average time taken to supply the answer.

35. Lancaster, pp.74-5.

Microevaluation would involve an investigation of the reasons for the above, why questions are not answered correctly.

Lancaster found that evaluation of reference service could be grouped into the same types as those already mentioned by Rothstein. He concluded most evaluation was still statistical, and that the majority of the data collection was being carried out in the area of macroevaluation, stressing the first and the fifth types of data - the total number of questions and the time taken. Some work had however been done on the observation and analysis of the behaviour of reference librarians. This was useful for the understanding of strategies used by librarians in finding information. Lancaster's review also stressed the value of unobtrusive testing of reference effectiveness.

The Committee on Statistics for Reference Services of the American Library Association has produced definitions of various types of reference transactions.[36] There are two main types - These are reference and directional transactions. A reference transaction involves the use of one or more information sources ranging from print sources to persons. A directional transaction is one involving the physical use of the library. The committee felt that agreement on these terms would constitute the first step in evaluation of reference service, because an agreed basis would be established.

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36. K. Emerson. "National reporting on reference transactions. RQ vol.16, 1977, p.199.

Further insights into the evaluation of reference service have been supplied by a recent survey by the Committee on Reference Statistics of the Americal Library Association (sic).[37] Forms being used to analyze reference service statistics were examined and showed that fifty nine out of one hundred and one libraries kept a simple tally of reference statistics. Most libraries also reported keeping statistics data by more than one type of category. These types show trends of categorization similar to those already mentioned - by type of reference transaction, form of request, directional question, time of day at which the question is asked, type of material and resource used, type of user, length of time to answer, and type of action taken. Only eleven libraries kept statistics about the level of success in finding the answer to the question.

The Standards Committee of the Reference and Adult Services Committee of the American Library Association has now produced developmental guidelines for the provision of information services.[38] These provide a framework of performance levels against which evaluation can be carried out.

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37. M. Ciucki "Recording of reference/information service activities; a study of forms currently used". RQ vol.16, 1977, pp. 273-283.

38. "A commitment to information services: developmental guidelines: RQ vol.15, 1976, p.327-

To summarize, the literature on the evaluation of reference service shows there is still a concentration on measurement rather than evaluation. As Pings has stated, and perhaps overstated, "reference librarians have been practising their art for a hundred years, immune to malpractice".[39] Some evaluation has attempted to identify successes and failures, but little has been done on investigating the reasons for the failures. Any true evaluation has centred on the successful answering of questions, one aspect of reference service. Libraries which have analyzed their own performances, have reported high success rates. The objectivity of the librarian must be in question. An attempted question may well be equated with an answered question. Users have also been asked to evaluate the reference service with which they have been provided. A user is often unable to judge whether the answer given is a correct one. After all, if he had known the answer to the question already, he would not have needed to ask it. For him, the time taken to answer the question is relative, and he rarely has an appreciation of the possibilities of the library system he is using. If his expectations are low, any answer may be considered by him to be satisfactory. Again, an attempted question may well be equated with an answered question.

The brief mention already made of evaluating the reference service by more objective and unobtrusive means indicates that this method may be far more valid for the evaluation of reference service.

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39. V.M. Pings "Reference services accountability and measurement" RQ vol.16, 1976, p.120

2. Evaluation of Reference Service by Unobtrusive Means.

There are several notable studies in the literature which have attempted to evaluate reference service by unobtrusive means. Unobtrusive refers to the fact that people under observation are unaware that their performance is being assessed.

House[40] in a survey of twenty libraries which were all asked the same question by students in librarianship found a failure rate of 60%. Lowell Martin[41] in a study of the Chicago public Library used a panel of anonymous shoppers to evaluate reference service. A range of questions from simple requests for particular titles to more difficult reference questions and advice on reading guidance was used to test the accuracy of information found, the skill of the staff in reference searching, their awareness of current trends and publications, their background of book knowledge and the disposition of staff to follow up or follow through on inquiries. Inadequacies in the existing system were revealed. Crowley[42] had been involved in this survey and developed a methodology for the unobtrusive testing of reference service. He did a study on public libraries in New Jersey and hypothesized that public libraries with high expenditures would answer more questions successfully than libraries with low expenditure. Ten questions were used and these questions

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40. D.E. House "Reference efficiency or reference deficiency" Library Association Record vol.76,1974,pp.222-3.
41. L.A. Martin Library response to urban change, a study of the Chicago Public Library. (Chicago, American Library Association, 1969).
42. T,Crowley and T.Childers. Information service in public libraries: two studies. (Metuchen,N.J.Scarecrow Press, 1971)

were given to twelve public libraries anonymously by telephone callers. The questions were typical of those likely to be asked in a public library but did stress current affairs. There was no significant difference between the reference performance of the two types of libraries. The libraries overall showed poor performance. On a score of + 1 = correct answer, - 1 = incorrect answer, and 0 = unable to provide information requested, the libraries' total score was 65 out of a possible 120. i.e. there is about the same chance of receiving a correct answer as there is of receiving an incorrect one.

Another study by Childers[43] has also used unobtrusive measures of testing. Again requests for information were made anonymously by telephone to the libraries. Twenty six questions were asked of twenty five public libraries in New Jersey. These questions were more varied than those used by Crowley, and fell into nine categories- meaning, numerical or statistical, historical, exact wording, proper names, addresses, books and publishing, biography and geographical facts. The libraries demonstrated poor reference performance.

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43. Crowley and Childers, pp.73-204.

Childers used a much more complicated scaling of the responses to establish the correctness or incorrectness of the reply

C = wholly correct

P+ = correct answer is given, but is obscured by additional information, which may be incorrect.

P- = answer is incorrect but part of the correct answer is given.

N = wholly incorrect; no answers given, but an attempt has been made

R = no attempt to answer question

Each of these was assigned a weighting on five different scales. Childers decided that the following scale was more sensitive to the independent variables

1	0
(C or P +)	(P - or N or R)
i.e.C or P + = 1	P - or N or R = 0

Using this scale, there was a 54.75% chance of obtaining the correct reply.

Childers compared the performance of the libraries with various statistical measures such as numbers of staff, size of the collection, population served and hours open.

Ramsden[44] examined public library systems operating in Victoria. Part of this research involved a study of reference service. Similar results to those mentioned above were obtained. In a telephone survey of eleven

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44. M.J. Ramsden Performance measures of some public libraries: A report to the Library Council of Victoria (Melbourne, Library Council of Victoria, 1978)pp.51-79.

public libraries, nineteen reference questions were asked anonymously. These questions required factual answers and ranged from "When was the first Arab hijack?" to "Where can I get a fishing licence?" The answers were scaled differently from the Childers and Crowley studies. Values were attributed as follows:-

C	=	Correctly answered	5
P	=	Partially correctly answered	3
R	=	Not answered, but referred	0
N	=	Not answered, not referred	-1
Q	=	Refused to answer	-3
W	=	Incorrectly answered	-5

The findings of the survey reported a mean probability of .49 of receiving a correct answer to the questions. In all cases, library staff were over-confident of their success rate. The staff thought they answered questions more correctly than they actually did. These findings tended to support the proposition that the quality of reference service provided in Victorian public libraries was inadequate.

There is also a large body of literature on the evaluation of information systems in a computerized environment. This has as yet made little impact on the methods of evaluation of more traditional library service.

Various methods of evaluating reference effectiveness have been used. Methods of unobtrusive testing seem to have advantages in that they can more

objectively evaluate the answering of questions. Further discussion of the advantages and disadvantages of unobtrusive methods of testing will be included in the methodology of this study. In the research to date, only questions reguiring factual answers have been used, because these could be scored more objectively than those seeking background information. Little work has been done on investigating the reasons for failure to supply correct answers.

C. REFERENCE PROCESS.

In evaluating the effectiveness, it is important to understand the nature of operations carried out in answering a question. The sequence of operations is usually described as the reference process.

Various theorists have developed models of the reference process. Jahoda, Braunagel and Nath[45] have formulated a model of the reference process which begins with the receipt of a client's enquiry and concludes with the delivery of an answer, or some other response. Once the enquiry has been received, they have identified six decision making steps in the process.

1. Message selection. This involves question analysis and selection of search terms. Some terms, such as the names of places or organisations, or subject terms

45. G.Jahoda, J. Braunagel and H. Nath. "The reference process:modules for instruction" RQ vol.17 1977 pp.7-12

are being sought, such as specific dates, addresses, or publications.

2. Selection of categories of answer-providing tools. The works likely to answer the enquiry must be chosen. These may include dictionaries and encyclopaedias, handbooks and manuals, indexing services, yearbooks and journals. No research at present indicates how this matching of the enquiry and the resources is done, but terms identified as being sought, such as location, can be matched against an appropriate source, such as an atlas or gazetteer.
3. Selection of specific answer providing titles. A librarian must not only decide that an answer will be found in an atlas, but must choose a specific atlas.
4. Selection of access points within answer providing titles. The terms identified in the question must be reinterpreted in the terminology used in the specific title being searched. The atlas has been chosen, and the place sought must be checked in the index.
5. Selection of answer. The librarian must locate the answer, and establish that the answer chosen is a complete and correct one.
6. Question negotiation/renegotiation. This may take place at any stage during the reference process when difficulties are encountered.

Doyle and Grimes view of the reference process is that it constitutes a map whereby the searcher progresses from an expressed need for information to the information itself. They have identified twelve steps.[46]

1. Determination that a need for information exists. This is really an activity of the user and commences before the question is verbalized. This differs from the model already examined.
2. Statement of the question in its initial form.
3. Delimitation and redefinition of the question.
4. Statement of the redefined question. Steps 2-4 are carried out during the reference interview, and are sometimes referred to as question negotiation. Terms are established and scope, limitations and the need for the information investigated. These activities are carried out by the library staff.
5. Structuring the search
6. Selecting most suitable information resources.
7. Analyzing information sources selected.
8. Obtaining additional information if necessary. Steps 5-8 are carried out once the question has been redefined. The information resources are approached for possible answers. This part of the process is often referred to as the search strategy.
9. Synthesizing information.

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46. J.M.Doyle and G.H.Grimes. Reference resources: a systematic approach. (Metuchen, N.J. Scarecrow Press, 1976) pp.11-23.

10. Analyzing information
11. Decision making
12. Evaluation of the effectiveness of the search.

Steps 9-12 are all involved with the answer. The information found must be distilled and explained to the user. Step 12 refers again to the user - is the information supplied of value to the user. The librarian is rarely able to make this assessment.

Bunge[47] describes the reference process differently again.

1. Making sure that the question, as understood by the librarian, coincides with the actual needs of the patron.
2. Analyzing, categorizing or classifying the question on a number of dimensions in order to formulate a search strategy.
3. Translating the terms of the question into the relevant parts of the reference system (catalog subject headings, bibliography entries, etc.)
4. Making various decisions involved in conducting the search itself.
5. Evaluating the information found, in terms of the patron and his needs.

There are many other descriptions of the reference process. Katz[48] has described these in considerable detail. They all have the various steps outlined above in common, although these may be expressed differently and in far greater detail.

47. Bunge
48. W.A.Katz "Introduction to Reference Work" 2nd ed.(New York, McGraw-Hill, 1974), vol.2.

To summarize the literature, the various models all identify five components of the reference process:-

The User

The Question

The librarian

The resource required to answer the question

The answer

and link these by the search strategy employed to find the way from the question to the answer.

These models illustrate that answering a question involves a great deal more than the knowledge of the content of a limited number of print information resources. They draw attention to the complexity of the decision making involved in the reference process. These models have been helpful in establishing a list of factors affecting the quality of reference service provided in libraries, and particularly in setting the objectives of this study. Following the statement of the objectives, the factors affecting the reference process will be identified.

IV. OBJECTIVES AND SCOPE

The objective of the study is to design and test a methodology for the evaluation of reference service in College of Advanced Education libraries in New South Wales. One aspect of reference service, the supplying of answers to questions, is examined. All of the studies evaluating reference service by examining the replies to questions have to date used questions seeking factual information. One of the objectives of this study is to investigate the possibility of evaluating reference service by using questions which seek general information rather than hard, identifiable facts. An endeavour is made to design such questions, which are typical of those asked in College libraries in New South Wales.

The study also seeks the development of a scoring system suitable for judging the answers to questions seeking generalized or imprecise information. In addition, it investigates both macroevaluation and microevaluation of the reference service by examining in the former, the number of questions answered successfully and in the latter, the reasons for any failures. The factors affecting the reference process are examined in an attempt to identify those of greatest relevance.

The reference process is also examined to establish any pattern of behaviour of reference librarians. It is hoped that this might contribute to an understanding of the nature of the reference process.

Hypotheses

Two hypotheses are tested:-

1. That a student posting a reference question in a College of Advanced Education library in new South Wales has as many chances of receiving a "wrong" answer as a "right" one.*
2. That the education and training of reference staff handling the question will have greater influence on the success or failure in answering the question than the contents of the library collection.

* Definitions of "right" and "wrong" will be given later in the study.

Limitations

This is a pilot study. It is a preliminary study to test a methodology for any further evaluation of reference service in College libraries.

The study examines three College libraries only, and these are located in Sydney. The results gained at these libraries may not be typical, and cannot necessarily be transferred to the whole population of College libraries in New South Wales. The study is also limited to the testing of a small number of questions, namely ten. Extrapolation from the results with these questions is not possible. The results from these questions may not apply to the total population of questions asked in College libraries. Although efforts have been made to

design typical questions, there may be some bias in the types of questions used. The questions are based on those asked in one College library.

The questions used in this survey do not seek single facts. Any scoring system of the answers must inevitably be subjective. This is another limitation of the study, another limitation is that the study concentrates on one method of testing. Reasons for use of this method are given later in the study, but a larger study would employ several methods.

It is appreciated that as the size of the sample is small, the factors affecting the answers will indicate trends only. Generalizations cannot be made with any degree of confidence, but this does not inhibit the usefulness of the study as a test of the methodology.

Details of the methodology are given in Chapter VI. Before proceeding with the methodology, the factors which may possibly affect the reference process are listed. These have emerged from an analysis of the literature on the reference process in Chapter III.

V. FACTORS AFFECTING THE REFERENCE PROCESS

1. Reference collection

This term has already been defined on pp.9-10 of this study. The contents of the reference collection may affect the answer given. The quantity, subject representation and arrangement will all impinge on the usefulness of the collection, and its capacity to supply answers to questions. In the examination of the reference process earlier in this study, one activity was the selection of certain categories of reference materials to supply the answer. These categories must therefore be present within the reference collection, e.g. atlases. The quality of the reference collection may also therefore affect the reference process.

Reasons for failure to answer questions have frequently been attributed to the collection. Jahoda and Culnan list some of the possible reasons for unsatisfactorily answered questions.[49] Of ten reasons suggested, seven of these are concerned with the sources supplying the answer.

(a) no reference tool published to answer the question

(b) reference book published but not in library

(c) existing reference tool not sufficiently up-to-date

(d) existing tool does not have adequate index

(e) existing tool does not have information listed in a way to answer the question

(i) may not have been published

(j) information may have appeared in local newspaper; no index available

49.G.Jahoda and M.Culnan."Unanswered science and technology reference questions "American Documentation"vol.19 1968 p.99

As well as the contents of the reference collection, there is the nature of each reference book within the collection. The contents of the total library collection may affect the quality of the reply given.

Reference questions may concern the contents of the entire library collection.

Policies vary from library to library as to what portion of the total collection is kept separately as the reference collection.

2. Staff employed in reference work

There are many characteristics of the staff which may affect the reference service being provided.

(i) Numbers of reference staff employed.

This will have a bearing on the quality of reference service being provided, because it will dictate the numbers of staff on duty and the times at which the services are available.

(ii) Personality

If the activities of the reference process are examined, the personal qualities required by the librarian to carry these out effectively seem to be decisiveness, a desire to help people, and the capacity for analytical thinking. Recent work has shown that both verbal and non-verbal communication are important contributors to the reference process.[50] While skills for successful communication can be acquired, some innate ability must also be present.

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50. V. Boucher "Nonverbal communication and the library reference interview" RQ vol.16, 1976, pp.27-32.

(iii) General knowledge and subject knowledge possessed by the librarian.

These enable the librarian to interpret the reference question. There have been many long arguments on the importance of specific subject knowledge. Without entering into these arguments, such subject knowledge will affect the ability of the librarian to interpret the question accurately, and perhaps the ability to analyze and interpret the answer.

(iv) Education in library and information science received

Although Bunge's[51] and Ramsden's[52] studies indicate that there is little correlation between education of library staff and successful reference service, no attempt has been made to examine the quality or type of education received. The study of the reference process reveals that certain skills are required by librarians, as well as particular personality characteristics. These skills include analysis and synthesis of information, interviewing techniques and evaluation. Theoretical knowledge of the structure of answer-providing tools is required. Failure by reference librarians to answer questions may indicate they do not possess the skills or knowledge required, and this may have been caused by the education and training received. Some of the other factors discussed in this chapter may be affected by the education of library staff.

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51. Bunge
52. Ramsden, p.77

The staff in the reference department may not be qualified. For the purposes of this study, any library staff who answer a question will be deemed reference staff.

(v) Training received after preliminary basic educational qualifications in library science have been attained.

This training may be in-service training or programmes of continuing education. No claim is made by library educators that basic qualification will produce competent reference librarians per se. Additional on-the-job training is required. The length and content of this training must be considered.

(vi) Experience

Reference librarians have long saluted the value of experience as contributing to successful reference work. This experience may be quantitative, in terms of years, or qualitative, in terms of the types of libraries in which the librarian has worked, and the type of services being offered and in which expertise has been gained. Experience in other aspects of library work, such as cataloguing, may also contribute to successful reference work. These factors have been rarely examined or evaluated.

3. Management

There are two level of management affecting reference service in libraries. The first of these is the management of the library as a whole. Staff numbers and methods of staffing are usually determined by this level of management.

The emphasis given to reference work will be reflected in the formal organization structure of the library. Some librarians have permanent reference staff who work solely in that department. In other libraries, staff are rostered for work in several departments, one of which may be the reference department. General management may dictate the type of service given (for example, instruction in finding information may be given to the user, or the information may actually be found for the user) and will inevitably affect the quality of reference service supplied.

The second level is management of the reference department itself. The type of service offered, and the approach, may also be governed by this level of management too. Leadership style is an important consideration. Other management functions are quality control, the appraisal of staff performance, the keeping of statistics and staff organization, and these will all affect the reference service provided to users.

4. Catalogue

The location of the catalogue, the cataloguing practices used, the comprehensiveness of the catalogue, and its up-to-dateness will be factors in the provision of reference service. There has been little analysis of the connection between the catalogue and the reference

service. Minimal research evidence exists but reference librarians usually express criticism of catalogues with which they are provided. Catalogue use may facilitate the selection of categories of answer providing tools, and more particularly assist in the selection of specific answer providing titles as well as providing access to the total collection.

5. The question asked and its characteristics

Some questions are simply easier to answer than others. Categorization of questions has already been mentioned in the survey of literature. Some possible types of questions asked in libraries are listed later in a discussion of the design of questions for this study. The way in which the question is asked, and the amount of information given will affect the question negotiation within the reference process and ultimately its successful answering - is the librarian giving the answer required, or the answer she thinks is required.

6. Characteristics of the user

Just as personal characteristics of the librarian may affect the reference process, so too do those of the user. The user can be examined from several points of view. Studies categorizing users have been mentioned in the survey of the literature. The types of user and his mental state at the time will affect the outcome of the reference process. If he is able to express his question

in terms which the system can handle, he is more likely to receive a satisfactory reply. The level of education and expectations of the user are important. Surveys of users in educational institutions have shown that based on past experience, students expect little and limited reference service.[53] Physical characteristics as well as emotional ones may affect the outcome, although at least one study suggests that physical appearance is not a significant factor.[54]

7. Resources available outside the library and formal networks of library service

Experience with such services as the Bay Area Reference Center has shown that if a network of referral for difficult reference questions exist, then the outcome of the reference process is more likely to be successful. Unsatisfactory answers may otherwise be given. The resources of one library are frequently insufficient to handle all enquiries. To use the resources located elsewhere, the librarian must have some knowledge of the possibilities of other systems.

8. Physical factors

The location of the library itself, the lighting, and many other physical features may affect the reference process.

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53. M.Sandock. "A study of university students' awareness of reference services" RQ vol.16, 1977 pp.284-96
54. H.W.Kroll and D.K.Moren "Effect of appearance on requests for help in libraries" Psychological reports, vol.40, 1977, pp.129-30.

9. Hours of operation of reference service

Many reference services do not operate during the entire time the library is open. Many are closed for meal and tea breaks. If reference service is unavailable, then the quality is fairly obviously affected.

10. Time taken

The time spent on each question may affect the success of the outcome.

11. Question Negotiation, Question Analysis and Search Strategy

These three activities of the reference process have already been described in Chapter III, Section C. The question negotiation ensures that the question is fully understood by the librarian. The question is then translated into the terminology and structure of the information system, and the search strategy begins when the librarian approaches possible sources, steadily working her way through until the appropriate source is located. The search may be random, but strategy denotes a plan, a logical sequence of steps, moving from one resource to another. Any failure in these activities is evidenced in the answer selection, the fourth activity of the reference process.

The factors already mentioned impinge on how successfully these three activities are carried out. By examining these activities and the methods used within them, greater knowledge of the mechanics of the reference process will be obtained, and any factors affecting these elements identified. These factors will affect the total reference process.

The reference process has been examined, and possible factors affecting its outcome listed. These will be examined later in the study to determine the effect they may have had on the reference process during the answering of the test questions used in this study. Many of the factors as listed here are inter-related. There is insufficient knowledge of the process, of the way in which the factors affecting it interlock, and as yet no model attributing values to the contribution of each factor to the total process. Until there is such a model, any examination of the factors affecting the reference process must be wide-ranging.

VI. METHODOLOGY AND DESIGN.

A. Choice of test method

In evaluating the answer to a question, the five main components of the reference process already identified - the user, the question, the librarian, the resources, and the answer - need to be kept in mind. The survey of the literature on the evaluation of reference service already given in this study enumerated several methods of testing involving these components. The user can be asked if he is satisfied with the answer supplied to him; the librarian can be asked if he is satisfied with the answer he has given; or the answer can be examined more objectively in relation to the question by an outside source - has the right question been answered, and have all aspects of the question been covered in the reply.

The literature survey pointed out some of the problems associated with asking the user whether he is satisfied with the reference service he has been given. The overwhelming percentage of library users seems to be satisfied, but low expectations on the part of the user, a lack of appreciation of the full possibilities of the library system, and no knowledge of what the answer should be limit his capacity for judgement. Any information supplied to a user in reply to a question may be considered satisfactory. The information need not however be complete.

Similar high ratings of success are obtained when the librarian is consulted about her performance. The librarian is frequently unable to recognize her own errors in answering questions. She is unaware that the collection of the library has not been fully exploited, that specific answer-providing tools have not been located, or that reference works have not been used effectively. It may not be realized that the wrong question has in fact been answered,because of failure to negotiate the question properly. The librarian may not detect that all possibilities were not explored in seeking the answer. To the librarian, trying to find an answer to a question may merge with providing a complete and correct answer.

Another method of evaluation is to examine the answer. The ideal way of doing this is to examine every question in a particular reference department, and check the answer to each one. This is not practically feasible. There are also other disadvantages. Without consulting the user, it is difficult to establish that the question answered was indeed the required one, even if the validity of the information supplied can be assessed. To overcome some of these problems, contrived questions can be used. These are usually based on real-life experience, and may in fact be designed by selecting a sample from genuine questions that have been asked in libraries. They are nonetheless test questions.

Methods of evaluation employing consultation of users

or librarians, or examination of the answers to real questions asked in libraries have usually used obtrusive methods. The librarian has been aware that her performance was being evaluated. The Hawthorne effect[55] may be in operation. Knowing one is being observed may lead to different behaviour patterns from those usually followed, to tenseness and nervousness, or to increased efforts being made. Any interviews or questionnaires intrude into the setting being evaluated, and attitudes are created. Results achieved under these conditions may not necessarily reflect measures of average performance under normal operating conditions.

The alternative to testing reference performance by obtrusive methods, is to use unobtrusive methods. The main advantage of unobtrusive testing is that the investigator is no longer known to be part of the action, and the subject being tested can be evaluated in an ordinary every-day type of situation. Any results of such observation should reflect typical behaviour under normal circumstances. There are two main disadvantages associated with unobtrusive methods of testing. Firstly, the person being observed is not questioned, and is therefore unable to explain his actions, and secondly, there are ethical problems involving the invasion of privacy - should subjects of research be unaware that they are being tested.

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55. F.J. Roethlisberger and W.J. Dickson. Management and the worker: an account of a research program conducted by the Western Electric Company, Hawthorne Works, Chicago. (Cambridge, Mass., Harvard U.P., 1939)

With regard to the ethical problems, librarians should be willing to have the products or outputs of their work tested under normal operating conditions, as do other professionals. The rights of privacy may not apply to professional persons discharging duties associated with public office. The ethical issue is a contentious and sensitive one.

Webb has said that in any evaluation, different research methods should be used.[56] Each will have its own methodological weaknesses, and the combined use of several should cancel out some of these weaknesses. This study concentrates on evaluating as objectively as possible the answers given to test questions using unobtrusive means. This is an attempt to simulate the real life situation with a genuine user seeking the answer to a real question. For the above reasons, these methods are likely to gain more reliable results than other methods of consulting the librarian or the user. In a larger study, other methods would also be used.

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55. E.J.Webb Unobtrusive measures; nonreactive research in the social sciences.(Chicago, Rand McNally, 1966) pp.155-64.

B. Design of Test Questions

It was decided to use ten sample questions to test the reference effectiveness of College libraries. This number was dictated by physical constraints on the study. Similar studies have used questions ranging in number from ten to twenty-five. A larger number of questions would have given greater reliability by reducing the confidence interval, and would have improved the generalizability of the results, permitting their general applicability.

More than one hundred questions which had been asked during 1976 at Kuring-gai College of Advanced Education Resources Centre were first analyzed. No attempt was made to select a random sample, as it was felt that with such a small number of questions, an attempt should be made to choose questions which would be representative of those asked in College libraries, to represent a real life situation. A random sample of ten would not necessarily have achieved this.

An examination of the questions asked at Kuring-gai revealed that most of the questions in this library sought general information on particular subjects, and not simple facts. From this examination, it was assumed that questions seeking factual answers were not common in College libraries, and that College students customarily sought general information rather than single isolated facts. There is no other evidence to support this claim, but it is an opinion shared by many College librarians.

The questions asked at Kuring-gai College were

eventually reduced to ten for this study, concentrating on those seeking general information. Questions seeking bibliographical information also appear to be common in College libraries. These were excluded from the study, as one of the objectives of the study, for the above reasons, was to test a methodology for the evaluation of questions seeking imprecise information. The criteria for selecting the questions which were used in the study were the category of question, including the subject covered, and the ease of answering, based on the sources which were to be used.

Categories of Questions

Before proceeding with a listing of the questions used in this study, possible categories of questions are identified. An analysis of the reference process has already revealed the importance of question analysis and search strategy, and the matching of information supplied by the librarian in answering the question with the information given by the user in asking the question. The following categories of questions have been identified in the literature.[57] This categorization lists types of questions by the information which is required in the answer, the "Wanteds" and the information which is given in the question, "Givens".

57. G.Jahoda, J.Braunagel and H.Nath "The reference process; modules for instruction" RQ vol.17, 1977, p.9

TABLE 1

Categories of Questions

WANTEDS (Types of expected answers)	GIVENS (Types of access points)
1. Dates (specific dates)	12. Abbreviations
2. Events (involving people)	13. Dates (specific dates)
3. Illustrations	14. Events (involving people)
4. Numeric information	15. Illustrations
(a) properties (scientifically measured)	16. Organizations (specifically named; includes authors)
(b) statistics (involves counting) and other	17. Persons (specifically named; includes authors)
5. Organizations	18. Places
6. Persons	19. Terms or subjects (other than specific types already listed)
7. Addresses and general locations	20. Titles of publications (specifically named)
8. Publications	21. Unspecified or other (list specific term)
a. citations (including bibliographies)	
b. document location	
c. verification or completion of bibliographic data	
9. Terms or subjects	
a. abbreviations	
b. words, phrases, definitions, etc.	
c. abstracts, annotations, recommendations of publications	
d. general or background information	
10. Unspecified or other (list particular wanted)	

Most of the questions to be used in this study would fall into Category 9, seeking information about terms or subjects, and the information given in the question would fall into Category 19. Another consideration in selecting the questions was the subject covered. All Colleges have a strong bias towards education, and the questions selected reflect this by concentrating on the area of education. As one College was oriented towards a specific subject area, questions were included which reflected this orientation. It was hoped that this subject specialization might reinforce the quality of the answer given. At the same time, the questions were sufficiently general to be topical in all Colleges and were capable of being answered in all Colleges.

Sources of answers

The sources for answering the questions were also considered in the design. It was felt that any question requiring the use of dictionaries and encyclopaedias, both specific and general, the use of the catalogue, and elementary indexing services should present no problems of difficulty in the College libraries. There was no other testing of the standard of difficulty of the question. The pre-test (discussed at the end of this section) did to a small extent test the difficulty of the question. The questions chosen also reflected a need for recent information found less easily in traditional library sources.

Two questions taken from the Ramsden[58] study in

58. Ramsden, pp.67-8.

Victoria were added to the sample of ten. Other studies have shown that there is a very strong similarity between factual questions asked in a public library and those in educational institutions.[59] It was felt that the use of these questions would give some continuity and lead to comparability of results. After the pre-test (discussed at the end of this section), the total of twelve questions was reduced to ten.

In the design of the questions, background information was given for each question. This background explained the reasons behind the request, and gave further elucidation of terms used in the question. As it might have been obvious that the questioners were not bona fide students of the Colleges being studied, a background cover story was also given to cover the possibility of their being asked personal questions by the library staff.

Questions

The ten questions finally used in this study are now listed with their background information.

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59. D.B. Cameron "Public and academic library reference questions" RQ, vol.16, 1976, pp.130-132.

QUESTION 1.

I AM LOOKING FOR A DEFINITION OF "KINESTHESIS"- CAN YOU PLEASE HELP ME?

IF ASKED, I think it has something to do with the senses.

IF ASKED, Spell the word - saying I think it is spelt K-I-N-E-S-T-H-E-S-I-S - somewhat uncertainly.

IF ASKED, It is for an assignment.

IF ASKED, It is for an assignment in education

IF ASKED, I am a student at the University of New South Wales, but I live near here.

QUESTION 2.

I AM LOOKING FOR SOME BACKGROUND INFORMATION ON TOLKIEN. CAN YOU PLEASE HELP ME?

IF ASKED THE REASON, I have just read the Hobbit, and seeing I'll have a little more time soon, I wanted to find out a bit about the author.

IF ASKED WHAT COURSE: Education

IF ASKED, I am a student at the University of New South Wales, but I live near here/my sister is a student here. If you are given a book, ask for something shorter.

QUESTION 3.

I AM WANTING TO FIND OUT WHAT AUTISM IS.

CAN YOU PLEASE HELP ME?

IF ASKED WHY	A lecturer mentioned it in passing. and I want to follow it up.
IF ASKED HOW MUCH INFORMATION REQUIRED	I am not really sure how much there is - something fairly general I suppose (sounding vague).
IF ASKED WHETHER STUDENT :	No, I live near here and a friend said this library could be useful

QUESTION 4.

I BELIEVE EMILY HART WAS FAMOUS IN BRITISH HISTORY. CAN YOU PLEASE TELL ME WHO SHE WAS?

IF ASKED WHY	A lecturer mentioned her name.
IF ASKED IN WHAT CONTEXT	I am not sure - can't remember, but it was a sort of joke about the British.
IF ASKED WHETHER STUDENT	I am a student at the University of New South Wales, but I live near here.

QUESTION 5.

I AM TRYING TO FIND OUT HOW ONE MEASURES THE HEIGHT OF MOUNTAINS ON THE MOON.

CAN YOU PLEASE HELP ME?

IF ASKED WHY	I am having an argument with a friend.
IF PRESSED FURTHER	Well mountains on earth are measured in height above sea level. How then can they be measured on the moon?
IF ASKED WHETHER STUDENT	I am a student at the University of New South Wales, but I live near here.

QUESTION 6.

WHERE CAN I STUDY SPANISH IN SYDNEY?

CAN YOU PLEASE HELP ME?

IF ASKED WHY	I thought I might learn Spanish over the vacation - or next year.
IF ASKED LEVEL	I don't know any - I want an introductory course.
IF ASKED WHETHER STUDENT AT COLLEGE	I am a student at the University of New South Wales, but I live near here.

QUESTION 7.

I AM LOOKING FOR AN EXPLANATION OF THE OEDIPUS COMPLEX.

CAN YOU PLEASE HELP ME?

IF ASKED WHY	It's for an assignment
IF PRESSED FURTHER	It's for an assignment in psychology.
IF GIVEN A BRIEF (ONE OR TWO LINE) DEFINITION ONLY,	Press for further background information on the subject.

QUESTION 8.

I AM INTERESTED IN THE HISTORY OF WEAVING.

CAN YOU PLEASE HELP ME FIND SOME INFORMATION?

IF ASKED WHY	I got interested in the subject during the year, and thought I'd follow it up now I have a little more time.
IF ASKED	I am a student at the University of New South Wales, but I live near here - I thought you had some material on crafts.

QUESTION 9.

I AM LOOKING FOR SOME INFORMATION ON THE PROVISION OF HEALTH FACILITIES IN AUSTRALIA. CAN YOU PLEASE HELP ME?

IF ASKED WHY,	It is for an assignment
IF ASKED FOR FURTHER INFORMATION	Particularly interested in the health facilities of new urban areas in Australia, and in government and private involvement in these.
IF ASKED WHETHER STUDENT	I am a student at the University of New South Wales, but I live near here.

QUESTION 10.

I AM LOOKING FOR INFORMATION ON ACUPUNCTURE IN AUSTRALIA. CAN YOU PLEASE HELP ME?

IF ASKED WHY	It's for an assignment.
IF ASKED FOR FURTHER INFORMATION	I am trying to find out how extensive the use of acupuncture is in Australia - what impact it has had.
IF ASKED WHETHER STUDENT	I am a student at the University of New South Wales, but I live near here.

The ten questions chosen for this study can be analyzed according to the categories given on p.55.

TABLE 2

Categories of questions used in study

Question	Wanteds	Givens
1	9 (b), (d)	19
2	2, 9(d)	17
3	9 (b), (d)	19
4	2	17
5	9 (d)	18, 19
6	5, 7	18, 19
7	9 (b), (d)	19
8	9 (d)	19
9	4,5,6, 7, 9 (d)	19
10	4, 5, 9 (d)	19

As previously mentioned, consideration in the design of the questions was given to the possible sources of supply to the answers. At this stage of the study, the possible sources of supply of the answers were estimated. These would be the basis for the scoring of the answers in the next phase of the study. As well as the possible sources listed on page 64, it was also expected that a librarian would check the resources of other libraries if in difficulty.

TABLE 3.

Possible Answer-providing Tools

Question	1.	General dictionary; specialized dictionaries or encyclopaedias in the social sciences, psychology, education, medicine; more detailed encyclopaedias, books etc.
Question	2.	Biographical dictionaries; general encyclopaedias; literary biographical sources or encyclopaedias; subject catalogue.
Question	3.	Social sciences or educational encyclopaedia; specialized dictionaries in education or psychology; subject catalogue.
Question	4.	General encyclopaedias; biographical dictionaries.
Question	5.	General encyclopaedia, scientific encyclopaedia; general books on astronomy approached through subject catalogue.
Question	6.	Directories of educational opportunities; Telephone Directory.
Question	7.	Specific psychological/educational dictionaries and encyclopaedias; subject catalogue.
Question	8.	Subject catalogue; encyclopaedias.
Question	9.	Indexing services; Government publications; Subject catalogue; Directories; Handbooks/ manuals.
Question	10.	Indexing services; Subject Catalogue; Government publications.

Pre-test

Twelve questions were designed, ten from analysis of the Kuring-gai College bank of questions, and two from the Ramsden study.[60] These were then pre-tested at a large College of Advanced Education in Sydney with the permission of the librarian-in-charge, but without the knowledge of the staff. The College is larger than the three included in this study, but has similar aims and objectives. The questions were pre-tested to discover if there were any problems with the formulations of the questions or with the background information given to the questions. The pre-test was also intended to give the questioners some experience in playing their roles.

The College library accepted the questions as being genuine. The answers to the questions were not scored, but in terms of the sources expected to answer them listed on page 64 all questions were answered partially, with the exception of two, which were then discarded. The two questions discarded were:-

1. Can you please help me find out about the home tutor scheme for migrant women in Sydney?
2. Can you please help me find a picture of Saint Nicholas?

These two were also answered partially, but seemed to be handled less successfully than the others. It had been decided to use only ten questions, so these were discarded. Any problems associated with the other ten partially

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60. Ramsden, p.67

answered questions seemed to lie more with the librarian than with the question. For one question, additional information was supplied as background as a result of the pre-test. One of the questions taken from the Ramsden study[61] was altered slightly in its formulation, as the questioner experienceddifficulty with it in its earlier form. Question 5 had previously been expressed as :-

> In relation to what does one measure the height of mountains on the moon?

The question after the pre-test was changed to the form given on page 60:-

> I am trying to find out how one measures the height of mountains on the moon.
>
> Can you please help me?

The two forms of the questions are substantially the same. Any differences in the answers are referred to later in the study in a discussion of the scoring of answers to each question.

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61. Ramsden, p.67

C. Administration of Test Questions

1. Colleges in Sample

Three colleges were selected for the study. Each of these belonged to one of the three categories used in the recording of the statistics for College libraries in the annual supplement to Australian Academic and Research Libraries. The three categories are:-

1. Colleges of Advanced Education long established as teachers' colleges and recently transformed to Colleges of Advanced Education.
2. Recently established multidisciplinary colleges
3. Monodisciplinary colleges.

The particular colleges were chosen after some initial examination of statistics and data collected for the Maguire and Peake report[62] on the cataloguing requirements of college libraries. This data was consulted with the permission of the Higher Education Board and on their premises. It proved valuable in assessing the libraries, and the 1975 statistics given in the College Profiles included as Appendix A were obtained from that source.

The three colleges selected will henceforth be referred to as College A, College B and College C. A profile of these colleges is given as Appendix A. College A is a former teachers' college with a long history. It is located in the inner city area.

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62. Maguire and Peake Data examined at the Higher Education Board and Maguire and Peake pp. 9-34.

College B is a new college with a concentration on teacher education but offering other courses. It is located on the outskirts of Sydney. College C is devoted to courses in a particular subject area and is in temporary accommodation in the inner city area. Each of these College libraries was contacted and permission received for their participation in the study. The Chief Librarian and Deputy were the only staff in each institution who were aware that such a study would be undertaken. Not even they know when it was to be conducted. The initial requirements of unobtrusive testing were thus achieved. Visits were made to each of the institutions by the investigator, and details of the study explained to the Chief Librarians who were most helpful and cooperative.

The annual statistical supplement of Australian Academic and Research Libraries for 1977 was consulted to obtain 1976 statistics of the libraries being surveyed. One College had not been included. This College was approached for 1976 figures, but not all details could be obtained. Visits were again made to the libraries in 1978, to obtain 1977 statistics where possible, and to seek opinions of the reference service being offered, details of procedures, in-service training etc. There were difficulties in obtaining comparable statistics. Some of the statistics are incomplete, but an attempt has been made to examine the overall growth of the library and its institution over a three year period, and

to give general background information about the libraries surveyed.

2. Questioners

The questioners who asked the questions in the libraries studied were volunteers from students undertaking studies in the Bachelor of Library Science and the Graduate Diploma of Library Science programmes at the Kuring-gai College of Advanced Education. This did mean that they were experienced library users, which may have affected the opinions they formed about the reference service with which they were supplied. They were genuine students, and dressed and behaved as students. Although they ranged in age from eighteen to thirty five years, most were in their early twenties. One of the factors which may affect the assistance received when requesting reference service is the physical appearance of the user, as previously discussed on pages 45 and 46. This variable was controlled by using each student to ask the same question in each library. There were ten students, seven females and three males, each of whom asked one question in each of the three libraries. Any personal individual characteristic on the part of the questioner remained the same in all cases and should not have affected the results.

A briefing session was held for the volunteers. The purpose of the study was explained. Guidelines for the questioners (modelled on those from the Ramsden study [63])

63. Ramsden, Appendix C4

were distributed and discussed. These guidelines are included in Appendix B, with the names and locations of the Colleges removed. The quesions were distributed at the briefing session and the background information explained. The additional information was to be given to the librarian only if requested. Each questioner was able to ask the question in his or her own words, based on the question as it had been written on the instruction sheet. The question could be adapted to the situation. The additional information was to be disclosed piece by piece by the questioner to resemble a real-life situation.

The questioners were instructed to approach the Reference Desk in each library. If this were not obviously located, or not indicated, then the first desk encountered in the library was to be approached. Each volunteer rehearsed his or her performance when carrying out the pre-test, as described on page 65. Any problems after the pre-test were discussed with the investigator. The voluhteers then went to the libraries, and carried out the exercise.

It was realized that as the Colleges were small, there was a strong possibility that the questioners would be recognized as outsiders, hence the provision of background details already mentioned. The questioners, if asked, were to say they were students from another educational institution,but that they lived near the College being tested, and were therefore using its library facilities.

3. Physical Administration

The questions were asked in person, where similar studies have used the telephone. Few requests are received by telephone in College libraries. Control could have been more easily achieved by using the telephone, but this method of questioning would have simply been inappropriate in a College library. Problems in putting the question in person have already been mentioned, but it was felt that any problems would be overcome by using the same person to ask one particular question.

Unobtrusive means of testing were chosen, as already indicated. None of the library staff being studied knew or discovered that their performance was being evaluated. None of the questions or the questioners was identified as being artificial or unreal, even though one College (College C) realized that some of the questioners were not students at the College where information was being sought. These questions were still treated as genuine information enquiries.

A form was compiled for the administration of the questions, and the recording of details. This form is included as Appendix C. This form included details of the question and the answer, the time taken, sources used, questions asked, and a reference to the librarian's attitude. With hindsight, this form could have been tighter, and certainly as far as Librarian's Attitude was concerned, should have had a range of replies - Helpful, friendly etc. More details about sources consulted would also have facilitated the compilation of results.

Asking the questions in person did present some problem in the administration of the questions, because of the distances involved in travelling to the libraries. The questioners were not paid, but out-of-pocket expenses were met by the investigator.

The study was carried out over approximately three weeks at the end of second semester, 1977, that is in November. This overlapped into the examination period. College libraries are traditionally quieter at this time of year, and receive fewer reference enquiries. A more typical period to be tested would have been about the middle of the semester. In fact, there should have been better reference service supplied at this time of year, although one could also say that overworked staff might be suffering from exhaustion.

The timing of request during the day was randomized. Avoiding the lunch break was attempted, as it was felt this might skew the results obtained. Questions were asked on various days of the week. On only one occasion was more than one question asked in one afternoon. Transport problems necessitated four questions being put in one afternoon (by different people). These were asked at half hourly intervals.

The results of the study will next be analyzed, to determine the success rate on these ten questions, and to establish what factors may have had an impact on any failures.

VII. SCORING OF TEST QUESTIONS

A. General scoring

General criteria

One of the hypotheses being tested in this study is:

> That a student posing a reference question in a College of Advanced Education library in New South Wales has as many chances of receiving a "wrong" answer as a "right" one.

The difficulty then arises of what constitutes "right" and "wrong". Mention has already been made of the scales used for responses to test questions in the studies by Childers,[64] Crowley[65] and Ramsden.[66] Their scales assigned values to answers ranging from not attempting to answer a question, or an incorrect answer, to a wholly correct answer. The researchers each used different categories for scoring the responses and assigned different values to them. Yet overall results were comparable.

The questions used in these three studies were for the most part questions of fact. Some questions in this category will elicit slightly different replies in different reference sources. For example, the height of Nelson's Column in Trafalgar Square varies in different handbooks describing it. But most questions of fact are satisfied by a single answer which can be easily verified, for example, the date of Nelson's victory at Trafalgar.

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64. Crowley and Childers, p.116
65. Crowley and Childers, p. 51
66. Ramsden, p.69

In the present study, as has already been discussed on pages 53 to 56, many of the questions designed to reflect those commonly asked in College libraries are more general. Satisfactory answers to such questions are no less accurate than answers to questions of fact, but are much less well defined, more extensive, and diffuse. The problem of scoring the performance of libraries in answering questions of this type is therefore more complex. At the question design stage, possible sources which would provide answers to the questions used in the study were postulated on page 64.

From these can be extracted general criteria which will apply in the evaluation of responses to those questions not susceptible to factual answers. The criteria established were:

types of sources used
number of sources used
appropriateness of sources used
manner in which sources used

The sources used are the basis for scoring. There is no single source or group of resources. Any one of a number of sources may be used. "Sources" and "resources" are used interchangeably in the literature and in this study. They are defined simply as the range of materials both print and non-print capable of supplying answers to questions. Most of the sources used are print, but may also include people and organizations.

Scales

An aphabetical scale of six answers ranging from C for fully correct to W for totally incorrect was used by Ramsden.[67] The same scale of alphabetic characters, C, P, R, N, Q, W, has been used in this study. The types of answers considered appropriate for each category have however had to be expanded or amended slightly to accommodate the scoring criteria based on sources which was adopted in this study.

The values assigned to the alphabetic symbols in the scoring scale for this study are as follows:-

C Fully correct answer. Several sources or types of sources used. All aspects of the question have been covered in the answer.

P Partially correct answer. More than one source or type of source used. Not all aspects covered in the answer.

R One source or type of source only used. User referred elsewhere to possible source of answer. This may be a library or non-library source.

N One source has been used, but used incorrectly. User has not been given instructions in use. No follow-up to ensure the answer has been located.

Q No sources consulted: No suggestions made.

W Inappropriate or incorrect sources used.

In scoring the responses received, the final category W, was discarded. Inappropriate sources were frequently

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67. Ramsden, p.69

consulted, but were never the only sources used. As it is likely that a librarian will try many sources, both likely and unlikely, in a conscientious search for an answer to an enquiry, it would be a little harsh to penalize a response if an incorrect source or sources had been tried.

By basing the scores on sources, the scoring has been made as objective as possible. The investigator completed all the test questions in each library studied in order to identify and examine appropriate sources and to arrive at a scoring system for each. By inspecting the collections of each of the three libraries, the investigator ensured that sources capable of providing answers to the questions were present. The scores given for each library's performance on each question were also verified by an experienced reference librarian who is a colleague of the investigator.

In scoring the responses, it was necessary to ensure that certain aspects of each question had been covered in the answer. For this reason, and in order to allow critical appraisal of the investigator's concept of the "right" answer as well as her application of the general scoring criteria, the rationale for the scoring of each question is given below, along with the score each library obtained for each question on the alphabetic scale.

B. Scoring scale and results for all questions

Question 1 I am looking for a definition of "kinesthesis". Can you please help me?

Scoring scale.

C Use of International Encyclopedia of the Social Sciences, where an eight page article including bibliography can be found; use of subject catalogue, books located, and instruction given to user on use and location; periodical articles found on subject, using indexing service

P Specialized subject dictionary (psychology, medicine, etc.) An explanation as well as definition was required. This should have been established during the reference interview.

R General English language dictionary only used

N No sources consulted. Suggestions given to user to try various dictionaries, but not followed through. Source used incorrectly.

Q No sources consulted. No suggestions made.

A definition in a general dictionary would be useful as a starting point, but is not considered a definitive answer. One would expect a College student to have consulted this source before asking a librarian. Specialized dictionaries would provide a useful, but fairly succinct and limited answer; a specialized encyclopaedia article, book or periodical article would be the most useful to a student, and the use of these is therefore considered to provide the most correct answer.

Results

College A	College B	College C
N	N	P

The answers were scored this way for the following reasons -

College A showed the user the location of general English language dictionaries, and of biological dictionaries, but did not consult any of the sources herself, or check whether the user found the answer.

College B gave the same response.

College C found a definition in Blacks Medical Dictionary for the user, and also consulted general language dictionaries. The enquiry was taken no further. This question which seemed comparatively simple was fairly badly answered. The suggested use of a biological dictionary seemed somewhat inappropriate to the subject of the enquiry.

Question 2 I am looking for some background information on Tolkien. Can you please help me?

Scoring scale

C Biographical dictionary related to literary figures, e.g. Contemporary Authors

P Dictionaries and encyclopaedias related to literature; Use of subject catalogue for work on Tolkien, and instructions given in locating them. This answer is considered to be only partially correct, as brief information only was required. This detail should have been ascertained in a reference interview with the user.

R General encylopaedia; general biographical dictionary. The brief information contained in these sources is not considered sufficiently detailed for a complete or partial answer to this question.

N No sources used. User told to consult Tolkien in subject catalogue, but not assisted. Source used, but used incorrectly.

Q No sources used. No suggestions made.

The questioner had been instructed to seek biographical material, wanted a considerable amount of detail, but did not have time to read a whole book. The scaling of the use of the subject catalogue is a little different for this question, as the reference interview should have established that books were not required.

Results

College A	College B	College C
N	R	C

College A directed the user to the subject catalogue to the entry under TOLKIEN, but did not verify that information was in fact located.

College B consulted the Encyclopaedia Britannica and found brief information. The index was not consulted in first approaching this source.

College C found the entry in Contemporary Authors, and also consulted Cassell's Encyclopedia of Literature, the Oxford Compantion to Literature as well as two other literary encyclopaedias.

This library was therefore awarded a completely correct score.

Question 3 I am wanting to find out what autism is.
Can you please help me?

Scoring scale

C Lengthy article from International Encyclopedia of the Social Sciences; Books on autism found from subject catalogue and user assisted in finding them; periodical articles found from indexing services such as Education Index, user being given instruction on use.

P Psychological or educational dictionary used. Information given in these is considered too brief for explanation required by college student, and therefore does not constitute a fully correct reply; Books located, using subject catalogue.

R General English language dictionary. This is not considered to be sufficiently detailed for the level of a college student.

N One of sources listed above has been used, but used incorrectly. User told to consult catalogue under "autism" but enquiry not followed through.

Q No sources consulted. No answer given.

Results

College A	College B	College C
R	P	R

College A directed the user to the subject catalogue to consult the heading AUTISM. The enquiry was not followed through, and no further assistance was given.

College B showed the user where the material was located on the shelves. This answer therefore scored P.

College C directed the user to the catalogue to consult the heading AUTISM, and gave the user some shelf locations. The user was not shown where this material was located, and the enquiry was not followed though. The library scored R as a result.

Question 4 I believe Emily Hart was famous in British history. Can you please tell me who she was?

Scoring scale

C A correct answer is contained in the older editions of the Encyclopaedia Britannica. This can be located under the entry- HART, Emily -in the index. The user is referred to the entry for Lady Emma Hamilton, Lord Nelson's mistress. It is also in the New Encyclopaedia Britannica under HAMILTON, but cannot be approached via Hart.

P A partially correct answer would include the identification of Emma Hart as Lady Hamilton, but not as Lord Nelson's mistress.

R Attempts made to identify Emma Hart through the use of biographical dictionaries, such as Dictionary of Biography or encyclopaedias, but no answer found. User referred to another library.

N General historical books consulted

Q No attempt made to answer the question.

This question taken from the Ramsden[68] study is capable of a factual answer.

Results

College A	College B	College C
R	C	Q

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68. Ramsden, pp. 67, 70.

College A checked various biographical dictionaries including the Dictionary of National Biography, and Websters Biographical Dictionary. The librarian also checked the new edition of the Encyclopaedia Britannica, but failed to find the answer using the Micropaedia or the Macropaedia. This library also consulted Who's who, an incorrect source, but as was discussed under the general criteria of scoring, the W category of answer has been discarded from this study. This library also referred the user to Fisher Library, the main library at the University of Sydney.

College B gave a fully correct answer using the Encyclopaedia Britannica. This library also gave additional information about a film concerning Lady Hamilton

College C - There was no one on duty at the time the questioner tried to ask the question.

The results for this question in the Ramsden[69] study were:

Library 1	P	Library 7	C
2	C	8	R
3	P	9	C
4	R	10	C
5	C	11	C
6	W		

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69. Ramsden, p.69

Question 5 I am trying to find out how one measures the height of mountains on the moon.

Can you please help me?

Scoring scale

C The height of mountains on the moon is measured by the length of shadows cast by the mountains, and is therefore related to the height above the base of the mountain on the ground. Background information supplied to the user to be given to the librarian on request compared height of mountains on the moon with the height of mountains on earth, where they are measured in relation to sea level. Details of the mathematical calculations involved were expected to be supplied to constitute a fully correct answer. This answer can be found in encyclopaedias, handbooks, books on astronomy or the moon etc.

P An answer which gave information about the use of shadows, but gave no details about the mathematical calculations involved, was considered to be a partially correct reply. Information that the height was measured in relation to the base ground level was also considered to be partially correct, the "how" not having been considered.

R User referred to another possible source

N Sources such as encyclopaedias and books consulted, but no answer found and no referral.

Q No sources consulted. No answer given.

This question was also taken from the Ramsden study.[70]

Results

College A	College B	College C
P	P	P

70. Ramsden pp. 68, 71.

College A consulted the World Book Encyclopedia and books on astronomy in the general collection. The librarian found a book which said that heights were measured by their shadows. This was considered a partially correct reply. This library also referred the user to the Sydney Observatory. The investigator telephoned the Observatory and was given a perfect answer by the gentleman who answered the telephone. This answer was tailored to the user's requirements from the person's own knowledge.

College B said that the height was measured by the shadows cast measured from telescopes on earth. This answer was not obtained from a published source but from the general knowledge of one of the librarians who worked in College B. An attempt was made to search the catalogue for books on the subject. This library referred the user to the C.S.I.R.O. Division of Radiophysics at Epping. This was followed up by telephone by the investigator. The person on the switchboard sounded a little puzzled by the question and referred the questioner to one of the staff. He could not however be located in the building at the time of the telephone call. This was therefore considered the end of the inquiry.

College C came the closest to the correct reply. The librarian said that the height was measured from

the crater floor and that they used to be measured by the shadows as seen on earth. No details of mathematical equations involved were given.

All three libraries received the same score. There were differences in the replies given however. The scoring scale is not sufficiently sensitive to bring these out.

This question is again capable of a more definitive answer than others in this study. The question is worded slightly differently from the one used in the Ramsden study[71], where the wording was "In relation to what does one measure the height of mountains on the moon?" This alteration of wording was effected after the pre-test, when the questioner experienced difficulty with it as it was. The slightly different wording affects the scoring of the results.

The results for Ramsden's study[72] for this question were:-

Library 1	C	Library 7	N
Library 2	C	Library 8	P
Library 3	C	Library 9	C
Library 4	C	Library 10	N
Library 5	P	Library 11	C
Library 6	R		

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71. Ramsden, pp. 68,71

72. Ramsden, p. 69

Question 6 Where can I study Spanish in Sydney?

Scoring scale

C The N.S.W. Board of Adult Education Directory of Adult Education published in 1977 contains a list of nine evening and day courses available in Sydney. Use of this source constitutes a fully correct reply.

P Use of educational directories which give information about more than one institution e.g. directories of tertiary courses.

R Use of source relating to only one institution or service. Use of Sydney telephone directory. Referral to another agency, such as the Department of Education, Spanish Club, etc.

N Suggestion given to user to try above sources, but no assistance given in use.

Results

College A	College B	College C
N	C	Q

College A told the user to telephone the Sydney Technical College. This was a referral to a single educational institution and therefore scored N. Handbook of the Department of Technical and Further Education was held in the library, and this could have supplied the information.

College B found the directory extremely quickly, and therefore scored C by using it.

College C - The reference librarian was at afternoon tea, and the assistant who spoke to the questioner told him to return later. This result scored Q, no attempt being made to answer the question.

Question 7 I am looking for an explanation of the Oedipus complex. Can you please help me?

Scoring scale

C More than a definition was required by the user. A full answer was considered to be its association with Freud, reference to and explanation of the Greek myth, and more detailed information as background. The Encyclopedia of Psychology contains reference to all of these aspects in a general way. More detailed references can be found by consulting the subject catalogue under "Psychoanalysis" or by examining works by and about Freud. Consulting all of these sources is expected for a complete answer.

P Reference to any one aspect of the Oedipus Complex. Consultation of at least two sources, including one specialist psychological dictionary.

R Referral to another source. Use of only one source, either a specialized subject dictionary or encyclopaedia, or the subject catalogue.

N User shown source, but not instructed in their use. Enquiry not followed through. Use of general dictionary or encyclopaedia, where information given was not considered sufficiently specific.

Q No sources consulted. No suggestions made. No answers given.

Results

College A	College B	College C
R	N	R

College A told the user to check the indexes of various books on psychology. One specialized dictionary of psychology was consulted and two general encyclopaedias. This answer was considered to fall into the category R as no real information was given to the user.

College B consulted the catalogue with the user, and told the user to browse on the shelves at the numbers 150 and 150.195. No attempt was made to ensure that material was located, and the answer therefore scored N.

College C consulted the subject catalogue and general English language dictionaries, and therefore scored R. Again no actual information was given in the reply.

Question 8 I am interested in the history of weaving. Can you please help me find some information?

Scoring scale

C A complete answer to this question would include reference to encyclopaedias for brief background information. World Book's entry is extremely brief. Encyclopaedia Britannica has brief details in the Micropaedia, referring the user to a lengthy article on the development of the textile industry in the Macropaedia. A fully correct answer would also include reference to the subject catalogue for any books on weaving, or in the absence of these, more general books on arts and crafts, and/or various types of weaving. Use of specific subject encyclopaedias, such as an encyclopaedia of textiles.

P A partially correct answer would include reference to at least two of the sources outlined above.

R Referral to another library/agency. Use of only one possible source. Consultation of subject catalogue under specific as well as general subject headings. The librarian is expected to instruct the user in the full use of these tools.

N Only one source used, but used incorrectly. Use of source not followed through.

Q No sources consulted. No attempt made to answer question.

Results

College A	College B	College C
R	N	N

College A told the user to consult the subject catalogue under WEAVING. No assistance was given, and no attempt made to follow the answer through. The Encyclopaedia of Textiles was consulted and some material found. This answer constituted an R reply. One source only was actually used by the librarian.

College B directed the user to the catalogue, but did not assist in use. The user was also directed to the shelves to browse at 746, but no attempt was made to follow the enquiry through.

College C gave the same answer.

Question 9 I am looking for some information on the provision of health facilities in Australia. Can you please help me?

Scoring scale

C This question related to an assignment topic, and required fairly detailed and comprehensive information, which should have been discovered after the question negotiation. A complete answer would include reference to the subject catalogue under "Public Health" for any publications held by the library; use of directories or yearbooks listing services available; use of Australian Public Affairs Information Service or specialist medical bibliographies to find articles available. Additional possible sources would have been Australian Government Publications and Australian National Bibliography.

P A partially correct answer would include reference to at least two of the sources outlined above; the enquirer would be shown how to use these and be given appropriate subject headings to consult.

R One source only consulted. User referred to another agency.

N One source only consulted, but inappropriate subject headings selected, or user not instructed in use.

Q No sources consulted. No attempt made to answer the question.

Results

College A.	College B	College C
P	N	R

College A consulted the Directory of Social Services in N.S.W., the Official Yearbook of Australia, and the subject catalogue. The user was shown the relevant sections. This answer was therefore considered to be partially correct.

College B sent the user to consult the subject catalogue, but gave no instructions in use. This received the category of N.

College C consulted the catalogue and located only a small amount of material. The user was however referred to another source for the answer. The name of this organization was given incorrectly, and the investigator was unable to find it listed in the telephone directory.

Question 10 I am looking for some information on acupuncture in Australia.

Can you please help me?

Scoring scale

C A fully correct answer would first involve ascertaining the depth of information required. There is little information available on this subject, so even a brief enquiry would require some detailed searching. Sources which should be consulted include Australian Public Affairs Information Service, Australian National Bibliography and Australian Government Publications; use of subject catalogue; use of indexes should be followed up to ensure that user found appropriate serial articles covered, and journals not held be followed up in union list such as Scientific Serials in Australian Libraries.

P A partially correct answer would include consultation of at least one indexing service, and of the subject catalogue, following their uses to their ultimate conclusion.

R Use of one source as outlined above, with instructions given in use. User referred to a medical library.

N Source consulted, but no instructions given in use and no follow up.

Q No attempt made to answer question. No sources consulted.

Results

College A	College B	College C
N	C	P

College A told the user to consult the subject catalogue. No aid was given in use, and no other sources were consulted for the answer.

College B consulted Index to Australian Medical Journals, as well as the subject catalogue. This constituted a fully correct reply.

College C gave much the same answer, but made no attempt to ensure that the user found her way from the indexing services to the actual information. No attempt was made to investigate if the user was able to proceed to locate the material.

VIII. RESULTS.

A. Summary of results

The results obtained by the three Colleges on all ten questions are summarized below in Table 4.

TABLE 4.

Summary of results.

Question	College A	College B	College C
Question 1	N	N	P
Question 2	N	R	C
Question 3	R	P	R
Question 4	R	C	Q
Question 5	P	P	P
Question 6	N	C	Q
Question 7	R	N	R
Question 8	R	N	N
Question 9	P	N	R
Question 10	N	C	P
Totals	2P's, 4R's 4N's	3C's, 2P's, 1R, 4N's	1C, 3P's, 3R's, 1N, 2Q's
Total	4C's, 7P's, 8R's, 9N's, 2Q's		

Out of a possible of thirty fully correct replies, four were received. If the partially correct and fully correct are considered jointly, eleven replies fell into these categories.

Numerical values can be assigned to each of the alphabetical values used in the scoring. If Ramsden's[73] values are used, the

C = 5, P = 3, R = 0, N = -1, Q = -3.

73. Ramsden, p.74

The scale which Childers[74] used was less sensitive than Ramsden's scale. Childers' scale was based on the assumption that any answers which were right or partially correct achieved the same score, and those which were wrong or incomplete were also assigned the same values. His scale was

C or P+ = 1

P- or N or R = 0

If this scale is transferred to the scoring used in this survey, then

C or P = 1

R or N or Q = 0

This is a less sensitive measure and is perhaps more suited to the method of scoring used in this survey. The following tables listed the numerical values for each answer according to both sets of values.

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74. Crowley and Childers, p.127

TABLE 5

Numerical scoring of answers using Ramsden's values.

Question	College A	College B	College C
1	-1	-1	3
2	-1	0	5
3	0	3	0
4	0	5	-3
5	3	3	3
6	-1	5	-3
7	0	-1	0
8	0	-1	-1
9	3	-1	0
10	-1	5	3
Totals	2	17	7

TABLE 6.

Numerical scoring of answers using Childers' values

Question	College A	College B	College C
1	0	0	1
2	0	0	1
3	0	1	0
4	0	1	0
5	1	1	1
6	0	1	0
7	0	0	0
8	0	0	0
9	1	0	0
10	0	1	1
Totals	2	5	4

Since the best score on either scale, that of College B, is $\frac{17}{50}$ on the Ramsden scale and $\frac{5}{10}$ on Childers, these results indicate that in each of the libraries studies, the user making a reference enquiry has an equal chance, or less than equal, of receiving a "right" answer. This would seem to support the hypothesis

> That a student posing a reference question in a College of Advanced Education library in New South Wales has as many chances of receiving a "wrong" answer as a "right" one.

It should be noted however, that as a result of the small sample of questions used (10), the confidence

interval which supports the hypothesis is very wide. This reduces the significance of any variations in the results from the hypothesized mean of 50% of the answers being correct. The statistical analyses are given in Appendix D.

The objective of this study was to design and test a methodology for the evaluation of reference service. Generalizations from the sample of questions used cannot be made to the total population of questions asked in each library, let alone to the performance of College of Advanced Education libraries in New South Wales. In any expansion of this enquiry, a greater number of questions should be used, as well as testing a larger number of libraries.

B.

The second hypothesis of this study was:-

> That the education and training of reference staff handling the question will have greater influence on the success or failure in answering the question than the contents of the library collection.

As has already been noted, the confidence interval for the small sample of questions used in this study is such that no generalizations to the whole population of questions and libraries can be made. Notwithstanding, these three libraries have different characteristics which suggest the chances of receiving a correct answer may in fact be equal to or less than 50%, depending on the library, and by corollary, there may in fact be significant differences between the libraries tested. College B appeared in this sample of questions to have performed better than Colleges A and C. The factors affecting the reference process which have been previously identified on pages 40 to 48 will now be examined to determine those factors which appear to have most impact on the reference process.

1. Reference collection

The questions used in this survey were all capable of being answered by sources available within the library, either from the collection of material labelled as "reference" or from the collection of the library as a

whole. Success or failure in answering the question did not then depend on the contents of the library collection. Therefore other factors must have determined the outcome. No list of reference resources was compiled for checking, as for most of the questions, there was no single correct source, or group of sources. Many could have been used. The investigator, by answering the questions within each library herself, ensured that resources which could have answered the question were present.

There are some interesting points to note in the use of the collection. In examining the sources used to answer questions, there is obviously a great reliance on material contained in the so-called refererce collection. Librarians seem loath to call on the resources of the collection as a whole, and questioners who were directed to the main library collection were given little assistance in the use of this material. Responsibility seemed to end with the reference materials. It is not always clear what constitutes a "reference" book. Each library studied included material which could just as easily have been classified as "reference" and placed with the reference collection, as classified as lending materials, and located with the general collection.

Most librarians in the Colleges studied seemed to rely on a small quantity of material, and a small section of the collection, as possible sources of answers. This reliance seems to have had little justification, when

this material had not been able to supply answers. Many librarians consulted only one or two sources in seeking answers. This reliance on only a few sources, and in particular on reference resources, could have been influenced by the education of librarians. Many courses in librarianship concentrate on teaching students familiarity with a narrow range of so-called "reference" books to answer questions.

Statistics of the number of volumes held in the reference collection in each library could not be established for this study. The total holdings of the library cannot be compared. The reference collections will probably be of a similar order. Statistics of holdings seemed to be compiled in different libraries with different ground rules, and comparable statistics even with the use of those contained in the annual supplement to Australian Academic and Research Libraries were difficult to obtain. College A had the largest collection of materials and College B the smallest. (Details of holdings are given in full in the College profiles included as Appendix A). A comparison of these figures with the results of the study shows that there appears to be no correlation between collection size and reference success.

The quality of the collection may affect success, even though quantity may not do so. As has already been stated, each of the collections held material required to supply answers. The quality of a collection cannot easily be assessed, and no such assessment was attempted in this

study. Libraries were asked what they considered to be their subject strengths. Colleges A and C gave one of these strengths as Education, yet gave no better answers to Questions 1, 3, 6 and 7 which can be said to relate to education, than they did to other questions. (The results for one of the questions are given in Table 4, page 97). The arrangement of the reference collection may affect reference performance, but has not been investigated in this study.

2. Staff employed in reference work

Ideally, each member of the library staff who answered each question should have been canvassed individually for various personal characteristics. The problems of carrying this out while retaining unobtrusive methods of testing are overwhelming. Each librarian answering the question would be noted, and at some later stage, details including education and experience could be obtained. This study did not do this, so any deductions are made about the staff as a whole, with no attempt being made to analyze each individual.

The characteristics of the staff which may have an impact on the supply of reference service are listed on pages 41-43. These will now be examined and related to the results.

(i) Numbers of reference staff employed

The numbers of staff employed were difficult to establish definitely as staff employed in reference work in two of the Colleges were also assigned other duties.

College A had a total of fifteen providing service, but each of these had other duties, such as circulation. College B had a total of nine providing service, but each of these also had other duties. College C had a total of two and a half staff with additional help at times of stress. This staff of two and a half was dedicated solely to reference work and to assisting readers. This library did however score poor results on two questions when no staff were on duty at the reference desk.

There is insufficient data to support any relationship between staff numbers and success. More details on the activities of library staff, including the number of hours spent on various activities, particularly the answering of reference question, should be collected in further studies in order to be able to make direct comparisons.

(ii) Personality

The only indication of personality recorded in this study was the attitude of the librarian to the questioner. A rather crude attempt to register this was made by asking the questioners to report in their own words the attitude of the librarian towards them. No grading of the attitudes along a logical continuum, for example, extremely helpful to not helpful, was done, as it was felt that the questioners' comments might be more revealing. Quantifications of the attitudes was not therefore possible. A full list of the attitudes noted by the questioners is given in Appendix E. These attitudes were scaled roughly by the investigator, using two values N and P. N represented a neutral attitude and P a positive attitude. The value

attributed to each recorded attitude is given in Appendix E. A summary of the value for these attitudes is set out below.

TABLE 7

Attitude of librarian toward Questioner

College	Positive	Neutral
College A	2	8
College B	4	6
College C	6	4
Total	12	18

There are obvious difficulties in any such subjective attempt at measurement of attitudes. The students asking the questions may have been a little harsh in their comments, and more critical in their assessment than genuine students. Students in library science may have higher expectations of library service. Because each questioner asked the same question, the opinions gained on attitude in each question are at least comparable. No definite deductions can be made from these comments, but taken overall, they do seem to indicate lack of interest in the question, or in the questioner, on the part of the librarian. How this related to the success of the reference encounter is even more difficult to establish. One of the activities of the reference process is the question

negotiation. An uninterested librarian is unlikely to establish the parameters of the question during the question negotiation. Fewer questions will probably be asked. On the other hand, a librarian may be extremely helpful towards a student, but still be unable to locate the answer to an enquiry.

The attitude of the librarian as illustrated in this small number of questions seems to conflict with expressed desires of assisting students, and seems at odds with the aims of reference service in Colleges generally as expressed on pages 46-48. No attempt was made to match attitude with the correctness of the answer. The data is insufficient. A quick comparison of the fully correct answers and the attitudes of the librarians noted by questioners showed no correlation. Of the four fully correct replies, two attitudes expressed were positive and two were neutral. Attitudes of librarians towards their users need further investigation. Notwithstanding the effect of the attitudes on the results, there will be some impact on the confidence of the user. If a user feels the librarian is not helpful, he is less likely to approach her again for assistance.

(iii) General knowledge and subject knowledge assessed by the librarian

No direct attempt was made to examine this factor. College B included in its in-service training some information about subjects covered in the curricula within the college. College B answered Question 5 from the

librarian's own general knowledge (reported on page 86). College B also gave additional information from her own personal knowledge in answering Question 4 (reported on page 84).

(iv) Education in library and information science received

Of the fifteen staff at College A, four were professionals (graduates with library qualifications), and seven staff had some library qualifications only. The remaining four had no library or tertiary qualifications. College B had six professionals and five non-professionals. College C's total staff of two and a half were professionals. Details of staff are given in the profiles of the Colleges in Appendix A.

The table below summarizes the staff numbers and their qualifications

TABLE 8

Reference Staff in College Libraries

Staff	College A	College B	College C
Professional	4	6	-
Nonprofessional	11	5	2½
Total	15	11	2½

It has already been mentioned that a great deal more information would have to be collected regarding the profiles of individual staff answering each of the

questions before any conclusions could be reached, and larger samples would permit generalizations. One could on this small amount of data attribute College B's slightly better performance to the better qualifictions held by its staff. In this study, any library staff who answered the question were regarded as reference staff. They may not have been qualified. However the conditions of the study would resemble the real-life situation. Any user is likely to obtain service from qualified or unqualified staff if a point of enquiry is manned by both types of staff.

(v) Training received after preliminary basic educational qualifications in library science have been attained

Another factor in considering the education of librarians is the in-service training, post-graduate training, or continuing education received. Of the three libraries studied, none had formal programmes of in-service training. College A conducted brief orientation tours for new staff. College B had the lengthiest programme of the three. General orientation was given in this College and a Senior Librarian supervised new reference staff, ensuring familiarity with subjects taught by the College. New staff continued to work with senior staff for up to one month. College C gave new staff brief orientation tours, and new staff worked with existing staff for two weeks. One might attribute College B's slightly better performance to its longer period of in-service training, but all programmes seemed to relate

more to familiarization with library practices than to a systematic extension of existing knowledge of reference service and its provision. Once librarians had become permanent staff members, no further training was given to them in a formal way. None of the three libraries made any attempt to monitor performance. Each of the libraries did facilitate attendance at continuing education programmes.

(vi) No attempt was made to measure the experience of the librarians in this study.

3. Management

Another factor affecting the provision of reference service is the library management, both chief management and that of the reference department itself. As has already been stated on page 43 the formal organization chart will reflect management's attitude. The charts for each library are given in the College profiles in Appendix A. Library A has the traditional division into Technical Services and Reader Services, with approximately equal staff numbers in each. No section is actually designated "reference". This may indicate a lack of emphasis given to this aspect of library service. College B has a non-traditional organization structure. There are two main functional divisions, Production Services and Utilization Services. The Utilization Services section includes Distribution and Processing, and within Distribution is the area specifically named Users.

No department is designated "reference", but the organization chart obviously stresses activities associated with users, and sees library activities in terms of the end product, the users. The emphasis placed on the user by management may well communicate itself throughout the library, and be an important factor in the apparently better performance of Library B.

The staff numbers discussed on page 105 are obviously decided by management, as are their activities, and the type of reference service provided. There was no clear statement of the type of service provided in any of the three libraries. College C provided detailed searches on difficult enquiries, but this decision seemed the responsibility of the individual rather than overall policy. No library seemed to have formulated objectives of the reference service being provided or at least not in writing. While the general objective of each library was to provide an effective reference service, and within that broad framework each staff member no doubt had particular objectives, the fact that there are no written objectives makes evaluation of performance against those objectives impossible. In the absence of written standards and objectives, each librarian will set her own, which may be highly variable from individual to individual and within the same individual at different times.

As well as the general management of the library, there is the management of the reference service itself. There appeared to be very little quality control

exercised. No check of answers was carried out by any of the three libraries. When the investigator discussed the handling of difficult reference questions with the Chief Librarians and Reference Librarians (or their equivalents) in each of the libraries after the investigation had been carried out, they all stated that such questions would be referred up the chain of command, until solutions could be found. This did not seem to occur in practice. No library recorded in writing any difficult question to which they were unable to supply a satisfactory answer so that it could be checked at a later date. The library staff may not have realized the answer was unsatisfactory. In three instances, the librarian to whom the question had been addressed consulted a colleague when experiencing difficulty finding the answer. In Colleges B and C the librarian asked another for assistance when answering Question 5. In College A, the librarian sought assistance from a colleague when answering Question 8. This consultation did not seem to be formalized.

The investigator discovered at the conclusion of the experiment when interviewing the Chief Librarians to obtain additional information that no statistical recording of reference questions was carried out by Colleges A and B. College C was the only library studied who kept statistics, and these consisted of an all-inclusive total number, with no categorization of the types of questions asked. This library was in the process of investigating better means of statistical recording suggested by a

Working Group on Reference Statistics in Victoria. While the keeping of statistics is no measure of success in itself, it is an attempt to establish what work is being carried out. No complete investigation of the success of the reference service can be carried out without these statistics. It is unfortunate that operational pressures seemed to be such in the College libraries studied that they were unable to record their activities. One would wonder how, without statistics of at least the volume of questions handled, management could deploy staff effectively and communicate needs for more or better qualified staff.

Catalogue

The actual use of the catalogue by the reference staff had not been seen at the beginning of this study as a significant factor affecting the reference process. It had been considered that the quality of the catalogue would affect the reference service supplied, in its provision of cross references, the subject headings used, and the depth of cataloguing and details provided. But large-scale failure to consult the catalogue had not been anticipated. The following table shows catalogue use by the three libraries in attempting the test questions.

TABLE 9

Catalogue Consultation

Question	College A		College B		College C		Total Number Positive
	Negative	Positive	Negative	Positive	Negative	Positive	
1	NO		NO		NO		0
2		YES	NO		NO		1
3		YES		YES		YES	3
4	NO		NO		NO		0
5	NO			YES		YES	2
6	NO		NO		NO		0
7		YES		YES		YES	3
8	NO			YES	NO		1
9		YES		ES		YES	3
10	NO			YES		YES	2
Totals	6	4	4	6	5	5	15

TABLE 9

Catalogue Consultation

Question	College A		College B		College C		Total No. Positive
	Negative	Positive	Negative	Positive	Negative	Positive	
1	NO		NO		NO		0
2		YES	NO		NO		1
3		YES		YES		YES	3
4	NO		NO		NO		0
5	NO			YES		YES	2
6	NO		NO		NO		0
7		YES		YES		YES	3
8	NO			YES	NO		1
9		YES		YES		YES	3
10	NO			YES		YES	2
Totals	6	4	4	6	5	5	15

Out of a total of thirty questions, the catalogue was consulted in fifteen of them, that is half. While the results of the catalogue use are small in numbers, they can be compared with data returned to the Maguire and Peake study.[75] While attitudes expressed toward the role of the catalogue were ambivalent, it does appear that College B had more modest ambitions for its catalogue than Colleges A and C. Colleges A and C indicated in the returns that the catalogue should be a means of extending the scope of the collection. This attitude does not seem to be borne out in the actual use of the catalogue in answering these ten questions. College B in fact used the catalogue more than did Colleges A and C in this study, yet indicated that the catalogue was regarded as a simple finding list. One of the factors contributing to College B's performance may be their use of the catalogue. This point needs further study and investigation.

Even when the catalogue was used, it was not sufficiently exploited. A standard list of subject headings was not consulted by the library staff in any of the three libraries studied, and cross references were rarely followed in approaching subject headings. Even when students were referred to the shelves for browsing, the classification numbers were not always obtained from the catalogue, and were very broad or too narrow. A user was told to browse at 150 for material on Freud in response to Question 5 by College B. This would supply very general pyschological information only, and locating material on

75. Data consulted at the Higher Education Board

the Oedipus complex would be time-consuming. College C instructed the user to browse at 618.9289 in response to Question 3 concerning information on autism. An examination of material at this very specific number would mean that more general material, and that covering educational aspects would not be located.

The subject headings consulted for each question are listed below in Table 10.

TABLE 10

Subject Headings Consulted

Question	College A	College B	College C
1	-	-	-
2	TOLKIEN	-	-
3	AUTISM	AUTISM	AUTISM
4	-	-	-
5	-	MEASUREMENT MOON PLANETS SPACE	MOON ASTROPHYSICS
6	-	-	-
7	FREUD	FREUD	OEDIPUS COMPLEX
8	-	WEAVING	-
9	HEALTH COMMISSION PUBLIC HEALTH SOCIAL SERVICES	PUBLIC HEALTH	PUBLIC HEALTH
10	-	ACUPUNCTURE	ACUPUNCTURE

There are several points to note from these results. The lack of use of the catalogue by Colleges A and C in answering Question 8 was particularly significant. This was a general question about weaving, and books from the main library collection would have satisfied the enquiry. For the most part, words from the question itself constituted the subject headings consulted in the Catalogue. Only rarely did the staff in the libraries studied analyze the question asked to establish other terms which would express the same concepts, and provide entry points to the library's catalogue, as well as particular reference resources.

Perhaps the most noteworthy fact to emerge from this data is the failure to consult general as well as specific subject headings. For example, College B had difficulty locating material on WEAVING, and checked the more specific heading, handweaving, but not the more general heading HANDCRAFT. In small libraries which do not have a great deal of material on fairly specific subjects, there is a strong possibility that the information required may form part of a more general work on the subject, and this may well satisfy the enquiry. It is interesting to note the use of the catalogue by College B in answering another question. It did attempt in answering Question 5 to consult more general as well as specific subject headings. PLANETS and SPACE were consulted as well as MOON.

The catalogue was not used at all to locate reference books.

The memory of the librarians in each library studied was relied upon for location of reference resources, and for their contents. The use of the catalogue is related to two activities of the reference process, the question analysis and the search strategy. This point is addressed later in the study on pages 129 to 132.

The reasons for failure to use the catalogue by the libraries studied in answering half of the questions is difficult to establish. This study was unable to investigate the reasons. While not ignoring other factors including possible lack of confidence in the catalogue and its inaccessibility, it is suggested that the way in which the catalogue was used may be a result of the education and training of librarians. Some of the library staff answering questions may have had some experience in cataloguing and would therefore have been more aware of the catalogue's structure, and methods of effective use. However, when cataloguing materials and assigning subject headings, the stress is always placed on the specific matter of materials, whereas when searching for information on a subject, more general, as well as more specific, may need to be consulted. Methods of teaching cataloguing may affect the way in which the catalogue is viewed as an aid to locating material within a library collection. Another possibility for the way in which the catalogue is used may be the frequently expressed but rarely researched contention that library schools tend to educate students with large or research library collections in mind. Students who

then work as librarians in small libraries may not have alterna tive methods of locating information when vast quantities are not held. Catalogue use in reference work needs extensive investigation.

5. The Question Asked and its Characteristics

The characteristics of the questions asked constitute another factor affecting the supply of a correct answer to those questions. The results obtained for each question are set out in Table 11 below:-

TABLE 11.

Summary of Results for Each Question.

Question	Alphabetical Score	Numerical Score	
		Childers' Scale	Ramsden's Scale
1	1P, 2N's	1	1
2	1C, 1R, 1N	1	4
3	1P, 2R's	1	3
4	1C, 1R, 1Q	1	2
5	3P's	3	9
6	1C, 1N, 1Q	1	1
7	2R's, 1N	0	-1
8	1R, 2N's	0	-2
9	1P, 1R, 1N	1	2
10	1C, 1P, 1N	2	7
Total	4C's,7P's,8R's,9N's,2Q's	11	26

Regardless of the method of scoring used, Questions 5 and 10 were answered best, and Questions 7 and 8 worst.

The number of questions used is too small to be able to draw comparisons between types of questions and success achieved. One of the questions better answered was the factual question concerning the mountains on the moon. Perhaps factual questions are easier to answer than broad questions seeking general information on a topic. Any future study could be designed to accommodate the hypothesis that the more an answer to a question consists of definite factual information the more likely it is to be adequately answered by a reference service for a College library.

If the categories of the questions as given on page 63 are compared with the results, there is no correlation. Questions 7 and 8 required information which fell into Category 9, but so too did Question 10, which was one of the best answered questions. Any future study could also be designed to test the responses of College libraries to questions requiring various types of information in the answer, as outlined in Table 1 on page 55. Various types of questions seeking factual information could be tested to determine any differences between success rates for the different types of questions.

6. Characteristics of the User

The same users asked each question in each library, so their personal characteristics should not have affected the answers to each question. It may be that differences in mood, or the attitude of questioner, or differences in the interactions between questioner and library staff

member had some influence on the way the same question was answered in different libraries. No attempt was made to analyze this factor which for the purposes of this study was assumed constant for each question in all three libraries.

7. Resources Available Outside the Library and Formal Networks of Library Services

Resources available outside the library and formal networks might affect the reference service given. Few referrals were given in answer to the questions. Those referrals have been listed and discussed in the question by question analysis of the results on pages 77 to 96.

Five questions were referred to other library or nonlibrary agencies. The questions and the actions taken are listed below:-

Question 4. College A referred the user to Fisher Library at the University of Sydney.

Question 5. College A referred the questioner to the Observatory.
College B referred the user to C.S.I.R.O. Division of Radiophysics.

In each of these instances, it was suggested that the user "go" to the institution. Both institutions were located some distance from the library where the user asked his question. No attempt was made to contact the organization on behalf of the user to check whether such enquiries were handled, or whether they were handled in person. No name of an individual contact was given.

For this question, College C did ring another library and obtained some information which was given to the user. The enquirer was not told the name of the library which had supplied the information.

Question 6. College A referred the questioner to the Sydney Technical College School of General Studies. The user was given the telephone number. No attempt was made to consult the handbook of the Department of Technical Education which was held by the library, and which would have given the relevant information.

Question 9. College C referred the user to a non-library information agency, a government department, but the name of the department was given incorrectly.

Question 10. College B referred the user to the State Library of New South Wales, suggesting that this library might have a bibliography on the subject. No attempt was made by the library to check that the State Library did in fact have such information.

College C referred the questioner to the State Library for journal articles found through using A.P.A.I.S. No check was made of the union lists to verify holdings.

None of the libraries studied referred questions to other Colleges of Advanced Education. The investigator had expected that some informal network of Colleges was in operation, but this proved not to be the case. The establishment of the College Libraries Activity Network in New South Wales may well have an effect on the referral patterns in College libraries and the use of union catalogues may lead to more cooperation and sharing of resources.

The State Library received most referrals. It is obviously viewed by the Colleges as a back-up source. Investigation has already shown that libraries tend to call on the resources of large known collections rather than smaller ones which may be physically closer.[75a]

When the investigator interviewed the Chief Librarians and Reference Librarians, or their equivalents, in each of the College libraries studied, each College library stated that a pattern, formal or informal, of referral of difficult questions existed in each institution. Questions which could not be handled by more junior staff were referred to more senior staff in each of the three College libraries. In practice, some library staff in each library discussed questions with their colleagues, but no question was recorded in writing for follow-up in any of the libraries or referred systematically to more senior staff.

75a. M.B. Line and R.J. Steemson. "Interlibrary lending in the United Kingdom: summary report of a national survey conducted in February 1977." Interlending Review vol.6, 1978, pp.31-38.

When interviewed, each Chief Librarian reported different patterns of referral operating outside the individual library's system. These are recorded in detail in the College Profiles in Appendix A. College A said they would refer unanswered questions to other libraries or non-library agencies. College B reported contacting subject specialists within the College when in difficulties with unanswered questions. In the study, College A made three referrals, College B two, and College C three. The College libraries studied are all using an informal system of referral of questions, but do not have systematic procedures for these. No library had a written manual of procedures to be followed in such circumstances. Only one library, College C, in answering one question, Question 5, contacted another agency on behalf of the user.

8. Physical factors

Physical factors, such as the location of the point of enquiry in the library may affect the reference process. In College A, there was an enquiry point close to the entrance of the library. However, all library enquiries were handled at this point by a wide variety of staff with varying qualifications. The enquiry point was located a short distance from the catalogue and from the reference collection. In this library, staff were located behind a counter and this may have hindered the effective use of the resources at their disposal. In College B, there were several enquiry points and it was not clear where questions should be directed. In College C, the enquiry point was clearly marked. It was close to the catalogue and reference materials. In Colleges A and B, the enquiry desk was located some distance from the main library collection. This may have contributed to the library's staff failure to use the total library collection, and not just the reference collection, more positively. It could be hypothesized in any future study that the greater the distance of the enquiry point from the catalogue, the reference collection, or the general collection, the less likely each would be used in answering reference questions. Such physical factors need further investigation.

9. Hours of Operation of Reference Service

In Each College studied, library management stated that reference service was given at all times the library was open. In College C, two questioners found the enquiry

point unmanned, and this College's recorded performance on these questions was obviously affected. The tea break was mentioned several times by the questioners as interfering with the process of finding an answer to a question.

10. Time taken

The time taken to answer a question may affect its success, and may also reflect the attitude of library staff towards particular questions, and affect the quality of the response. Data on time taken was collected and is set out in the table below:-

Table 12

Time taken to Answer Questions
(in minutes)

Question	College A	College B	College C
1	1	1	3
2	5	5	5
3	1	5	5
4	10	3	0 (not attempted)
5	8	5	40
6	5	1	0 (not attempted)
7	30	13	15
8	2	5	1
9	1	1	5
10	1	12	7
Total	64	51	81
Arithmetic Mean	6.4	5.1	8.1
Median	3.5	5	5
Mode	1	5	5

A Chi square analysis (given in Appendix D2) of the answers to the questions and the time taken to obtain those answers shows that there is a relationship between the two at the 5% significance level; that is, the longer the response time the more successful the answer will be. The small sample size again reduces the value of these results. What can be established by examining these results, is that none of the three libraries studied appears to have limits on the amount of time spent on each enquiry. This supports information gained by the investigator during interview. None of the three libraries set limits on the time to be spent on each question asked.

11. Question Negotiation, Question Analysis and Search Strategy

In a discussion of the reference process earlier in this study, models of the reference process were given (on pages 32 - 36). These involved four main activities. These were question negotiation, question analysis, search strategy, and answer selection. This study, by asking the questioners to record what was said by library staff, had hoped to be able to analyze some parts of this process. The data as collected have made this difficult, and the process is more complicated than at first realized. Some of these activities have already been discussed in considering factors 1 - 10 which affect the reference process. The use of the catalogue illustrated poor question analysis and search strategy. The question by question analysis of the results on pages 77 - 96 gives the way in which the reference materials was used. This illustrated poor search strategy. Inappropriate sources were frequently consulted and used inefficiently. There appeared to be no logical search pattern followed. After examining the data collected, it was decided to analyze one activity only of the reference process, the question negotiation, as it was recorded in the data collected.

Once a question has been received by a member of the library staff, there are various possible actions which can be taken. The first one should be to determine more exactly the user's requirements. The following questions are possible ones which could be asked by the librarian to clarify and elucidate the question.

Step A. Ask user to repeat the question in its original form (or librarian repeats it to ensure the question as asked has been understood)

Step B. Ask user for further explanation of the terms in the question.

Step C. Ask user for any background information, including the need for the information.

Step D. Ask user if any sources have already been consulted, and if so, which sources.

Step E. Ask user about personal background of library use.

Step F. Ask user how much information, and what detail, is required.

Following the negotiation of the question, the question would then be analyzed to establish possible terms for searching and possible sources could then be consulted.

These steps as outlined, may not all be necessary in negotiating all questions. They do not follow a definite sequence from A - F. It is assumed that at least some of these questions should be asked before commencing a search for information to ensure that a satisfactory answer to the right question is located. It would seem futile to consult various sources, without knowing how much information is required, and for what purposes. The data collected in this study, will now be examined for the inclusion of these various steps in the question negotiation. Each question will be considered separately. The result achieved is given in parenthesis.

TABLE 13.

Steps Carried Out in Question Negotiation

Question	College A	College B	College C
1	B, D (N)	D (N)	A,B,E (P)
2	- (N)	B (R)	B (C)
3	D, F (R)	B (P)	- (R)
4	B (R)	D (C)	- (Q)
5	D (P)	C (P)	B,C (P)
6	C (N)	- (C)	- (Q)
7	F (R)	C (N)	F (R)
8	D (R)	D (N)	D (N)
9	- (P)	- (N)	E (P)
10	- (N)	E (C)	

Very little question negotiation was carried out by the three libraries studied on this sample of questions. Most library staff asked some questions, related mainly to the nature of the enquiry.

The data given above can be used to establish which steps of the question negotiation are more commonly carried out. These are set out in the table following.

TABLE 14.

Steps taken in Question Negotiation

Step Taken	Numbers of timestaken
A	1
B	8
C	4
D	8
E	3
F	3

The most commonly asked questions by library staff were those concerned with Steps B and D, asking for further explanation of terms in the question, and asking what sources have already been consulted. In asking about previous sources, by far the most common question asked was:- Have you looked in the catalogue? This contrasts with the librarian's own failure to consult the catalogue, as already discussed on pages 114 to 120.

Summary of Factors affecting Reference Process

The factors affecting the success or failure in answering a question in a College library are many. Their inter-relationship is extremely complicated, and cannot at this time be established with any degree of certainty. Some of these factors have been identified, and attempts made to analyze these within the limits of this study.

The second hypothesis of this study postulated:-

That the education and training of reference staff handling the question will have greater influence

on the success or failure of the question

than the contents of the library collection

By ensuring that materials which could supply answers to the questions asked in the study were held in the library, this variable was controlled. Other factors must therefore be affecting the success of the reference process. The five components of the reference process can be examined - the user, the question, the resources, the librarian and the answer. The user remained constant for each question, the questions asked were the same in all libraries, and the resources were present in all libraries. Any failure within the reference process to find the answer must therefore lie with the member of the library staff and her performance. Given the size of the sample, the failure could also be attributed to the type of question. However, each question, with the exceptions of Questions 7 and 8 elicited a fully or partially correct answer in at least one of the libraries being studied.

If it is the librarian's performance which is causing failure to locate answers to questions, there are many factors which impinge on the librarian's performance. Several factors have been identified as contributing to her performance. These include the personal characteristics of library staff, the attitudes expressed toward users, the general management of the library and the management of the reference department, the physical location of the reference department, the time taken for the question. Poor question negotiation, question analysis and search strategy have been epitomized in the use of the catalogue and referral

patterns operating with difficult questions. Many of these factors can be attributed to the education and training received by library staff.

As any library staff who answered the questions at each of the libraries were deemed in this study to be reference staff, it is probable that some of the questions may have been answered by non-professional staff. Poor performance on their part may be attributed to lack of education and training. Any knowledge of library science would have been gained from qualified library staff with whom non-professionals were working. Lack of proficiency in professional staff as a result of education and training may therefore be self-perpetuating and influence total library operations.

Given the difficulties of generalizing from the small samples used in this study, at least the evidence tends to support rather than deny the proposition:-

> That the education and training of reference staff handling the question have greater influence on the success or failure in answering the question than the contents of the library collection.

The extent of this influence cannot however be established.

IX. CONCLUSIONS.

A. Summary of performance of College libraries tested

This study constituted a preliminary investigation of a methodology for the evaluation of reference effectiveness of College libraries in New South Wales. Any conclusions reached by an analysis of the data collected from ten questions asked in three College libraries in New South Wales may be applicable to only those Colleges studied, and only to the body of questions contained in this sample.

The background and review of the literature in this study revealed that one of the expressed goals of College libraries has been active participation in the teaching process within the College by the provision of outgoing reader services. One aspect of reader services is the reference service. If the goal of the reference service within each library studied is to provide reliable answers to the questions asked in College libraries, then this goal does not appear to be being achieved, at least in the sample studied. The results of the study show that in the three College libraries studied, and based on the sample of questions used, there is at best a fifty per cent chance of obtaining a right answer to a question. Even with all the reservations with which the methods of this study may be viewed, these results must cause concern in at least the Colleges studied. There are many similarities between the three libraries studied, and other Colleges in New South Wales. Teaching staff numbers, student numbers, library staff composition and numbers, and collection sizes are all

comparable. Any claim by the College libraries that they are an effective component of the teaching process within these three Colleges must be called into question. There is no cause for complacency about the quality of reference service being provided in College libraries in New South Wales.

The reasons for the poor performance of College libraries in answering the questions have proved to be much more difficult to establish. Because of the many factors affecting the reference process, and their inter-relationships, it has proved difficult to determine the contribution of each one of these factors to the total process.

In each of the College libraries studied, the collections were capable of supplying the answers to questions asked. Failure to locate information lay with the performance of the member of the library staff who handled the question. The questioners reported poor attitudes of library staff in the Colleges in answering questions. An examination of the management of the reference service revealed lack of quality control in all three Colleges, and lack of statistical recording in two of them. The library staff in the Colleges studied did not use the catalogue as often as was possible, nor did their use exploit its full potential. The time taken by each College library to answer each question varied considerably. The library staff in each College did not sufficiently negotiate the questions asked, and their performance showed poor question analysis and search strategy. Some of these

factors appear to have more significance than others, and many of them can be traced to the education and training of library staff.

The overall impression received is that library staff have not understood the needs of students in their searches for information. This failure to understand the requirements of the student was expressed in poor question negotiation, and in failure to follow the search for information to its ultimate conclusion, to ensure that material was located by the student.

If College libraries are to participate effectively in the teaching process, the staff in those libraries, and particularly the reference staff must have an awareness of the problems students have in locating information, how this need for information relates to their studies, and how the library staff can best meet this need.

B. Evaluation of Methodology

The methodology used in this study has enabled evaluation of College library reference service as it would be supplied in a real working situation. The use of unobtrusive methods of questioning obtained realistic results. No library staff detected that the study was being held. Although the questions asked were contrived, they were accepted as genuine by each of the libraries studied. The questioners too were accepted as genuine seekers of information, even though one library, College C, did realize that the questioners were not students from the College. There were no problems, other than logistic

ones, in asking questions in person rather than by telephone. Although the questions were asked in a contrived situation, there is nothing to suggest that the results would have been any different if the enquiries had been from "real" students.

The use of questions seeking general background material and not just factual details has also been proved to be possible. The scoring of the answers to such questions at first caused considerable problems. Many of these were solved by basing the scoring system on the sources used. This system of scoring was time-consuming, and would be difficult to use in a large-scale survey, unless better methods of data collection involving itemized listing of possible sources were developed.

The method of scoring of general questions must inevitably be subjective. There is no single "right" answer. By basing the scoring on the sources used, a certain amount of objectivity was obtained. Progress has been made in this study on the scoring of such questions. There are some differences between Colleges B and A and C in the factors considered. Given the sample size, these do tend to support College B's better performance and also validate the method of scoring used in this study.

Although the methodology used in this study might prove cumbersome in a large study, it does provide a simulation of real users asking genuine questions in libraries. This ensures conditions which can provide viable evaluation, permitting examination of reference service in a normal working situation.

This method of evaluation of reference service could be used to advantage by individual libraries in an attempt to evaluate their own reference performance against stated goals and in association with other measures used by the library, particularly statistical ones.

C. Suggestions for Future Research

This study was begun as a pilot study to test a methodology for the evaluation of reference service. It became far more exploratory than was anticipated at the outset, because of the many factors which appeared to affect the success of the reference process, and because of the inter-relationships of these factors. The reference process is an extremely complex one, and while the literature survey illustrated some theoretical approaches to the topic, there is still insufficient information about the reference process for any substantial body of theory to exist.

Further research should therefore be undertaken into the activities of the reference process, the question negotiation, the question analysis, the search strategy, and the answer selection. A closer examination of these activities, and of the factors affecting them would lead to a more soundly based theoretical approach to the whole area of supplying answers to information enquiries. A theoretical model of the reference process and the factors affecting it could then be developed. Once this theory has been established, it can be implemented in programmes of education and training for librarians. At this stage, there

are many assumptions made about the reference process. These assumptions must be tested.

Throughout this study, suggestions for research have been made. Each of the factors which may affect the reference process need considerable investigation, and with greater numbers of questions, statistical analysis could be carried out to determine the relationships of the factors. The personal characteristics required for reference work need investigation; the skills necessary for successful answering of questions must be identified. The management area needs further study, and so too does the use of the catalogue in reference work. The ability of library staff to handle more successfully particular types of questions needs testing, and optimum times required for successful answers established.

Before worthwhile evaluation of reference service can take place, more basic knowledge of the reference process itself and the factors affecting it needs to be established. Only then will macroevaluation, the reasons behind poor performance, be possible. Until then only microevaluation, discovering that performance is successful or not, will be possible.

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APPENDIX A.

COLLEGE PROFILES

College A

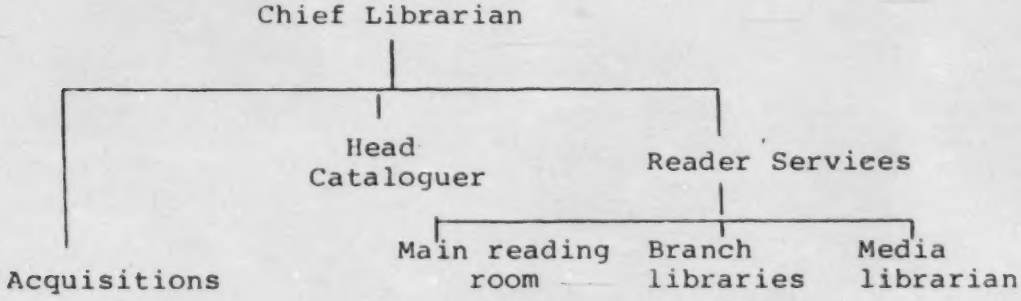
Date established: 1906
Date became College of Advanced Education : 1971.

Staff and student numbers

Year	Students	Teaching staff	Library staff
1975	2359	208	27
1976	2350	226	32
1977	2350	195	32

Courses offered:- Predominantly those in teacher education.

Library organization structure:-



Branches:- Main library and two branches.

Expenditures

Year	Collection expenditure	Staff expenditure
1975	$ 60,153	
1976	$255,200	$323,572
1977	$ 90,000	$363,533

APPENDIX A. (Cont'd)

COLLEGE PROFILES (Cont'd)

College A (Cont'd)

Collection Size and Loans

Year	Books,serials,microforms	Audiovisual	Loans
1975			70,172
1976	190,712	24,594	94,607
1977	201,805	43,833	100,585

Collection subject strengths:- Education, English literature

Total number of reference staff:- 15

No. professional reference staff
(degree + library qualifications):- 3

No. non-professional reference staff
Degree or some library qualifications:- 8
Clerical :- 4

Activities carried out:- Reader education, Inter-library loans, Information requests

Inservice training:- No regular programme. Orientation for new staff

Total no. reference questions handled
Per year :- No statistics kept
Per day :- No statistics kept

Time taken for each reference enquiry:- No statistics kept
No limit set

Time Reference Dept. operated:- At all times the library is open, Monday to Friday, 8.30 a.m. - 6.00 p.m.

Action taken on difficult reference enquiries:- Referred to the librarian in charge of the reading room.

Referral of questions to other agencies:- Questions are referred to other agencies, both library and non-library, but there is no real pattern followed.

APPENDIX A. (Cont'd)

COLLEGE PROFILES (Cont'd)

College B

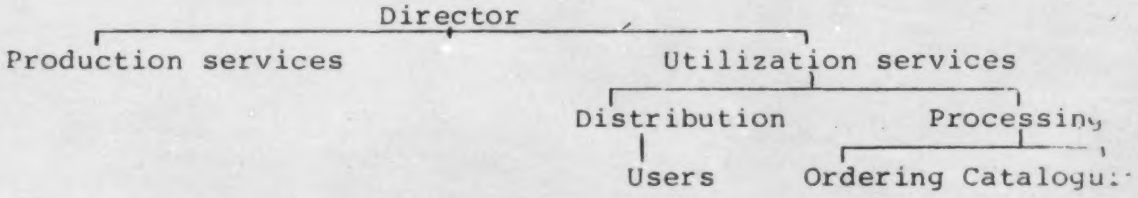
Date established: 1973 from the amalgamation of five separate institutions.

Staff and student numbers

Year	Students	Teaching staff	Library staff
1975	829	85	14
1976		95	31
1977	984	95	33

Courses offered:- Those relating to the health sciences

Library organization structure:-



Branches: Three

Expenditures

Year	Collection expenditure	Staff expenditure
1975	$120,000	
1976	$120,000	$157,000
1977	$130,000	

Collection Size and Loans

Year	Books, serials,microforms	Audiovisual	Loans
1975			37,591
1976	20,468	12,258	51,941
1977	25,046	22,044	47,992

Collection subject strengths: Psychology,Sociology,Medicine

APPENDIX A. (Cont'd)

COLLEGE PROFILES (Cont'd)

College B (Cont'd)

Total number of reference staff:- 11

No. Professional reference staff:- 6
(degree + library qualifications)

No. non-professional reference staff:- 5

Activities carried out:- Information enquiries, Reader education, Inter-library loans

In-service Training :- General orientation, Familiarization with subject areas conducted by Senior Librarian relevant in each specific subject area. Work with senior staff until confident (one week to one month). Training related to systems and practices in library.

Total no. reference questions handled

Per year:-	No statistics kept
Per day :-	No statistics kept

Time taken for each reference enquiry: No statistics kept. No limit set.

Time Reference Department operated:- At all times the library is open.

Monday - Thursday	8.30 a.m. - 6.00 p.m.
Friday	8.30 a.m. - 5.30 p.m.

Action taken on difficult reference enquiries:- Referred from junior to more senior staff.

Referral of questions to other agencies:- Questions are referred to other agencies, predominantly to subject specialists teaching within the College.

APPENDIX A. (Cont'd)

COLLEGE PROFILES (Cont'd)

College C

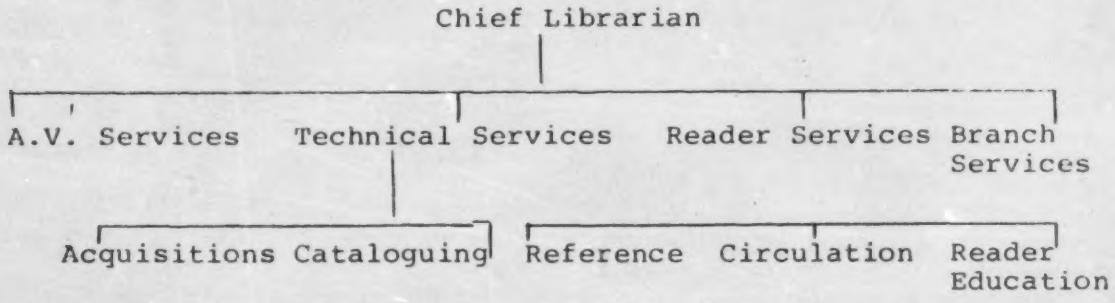
Date established:- 1969. Became a College of Advanced Education in 1974.

Staff and Student Numbers

Year	Students	Teaching Staff	Library staff
1975	576	52	10
1976			10
1977	624	69	16

Courses offered:- Wide range including teacher education and business.

Library Organization Structure:-



Branches:- Main library and one branch.

Expenditures

Year	Collection Expenditure	Staff Expenditure
1975	$83,250	$115,590
1976	$87,000	$132,000
1977	$90,000	$172,231

APPENDIX A (Cont'd)

COLLEGE PROFILES (Cont'd)

College C (Cont'd)

Collection Size and Loans

Year	Books,serials, microforms	Audiovisual	Loans
1975	42,208	12,549	
1976	49,873	13,500	37,420
1977	57,592	8,825	40,359

Total number of reference staff:- 2½

No. professional reference staff:- 2½
(degree + library qualifications)

Activities Carried out:- Directional enquiries, literature searches, AV enquiries

In-service Training :- Brief orientation. Two weeks working with reference staff for practical orientation.

Total number of reference questions handled
Per year:- 1173
(February - December)
Per day :- No statistics kept.

Time taken for each reference enquiry: Statistics kept for literature searches only.Average of 15 hours No time limit set.

Time Reference Department Operated:- At all times the library is open.

Monday - Wednesday	8.30 a.m. - 6.00 p.m.
Thursday-Friday	8.30 a.m. - 5.00 p.m.

Action taken on difficult reference enquiries: Difficult questions referred to the Reader Services Librarian. Name of student taken and contacted at later time.

Referral of questions to other agencies:- To the State Library of New South Wales, the local public library, and N.S.W. Institute of Technology.

APPENDIX B.

GENERAL INSTRUCTIONS FOR QUESTIONERS

1. It would be preferable if you are able to study in the library as a normal student before asking your question, and therefore be less obvious as an outsider. This will probably not be possible in College C, and there you will automatically be recognized as an outsider in any case. Your cover story on each question should cover this eventuality.
2. Direct your enquiry to the Reference Department or Reader Assistance unit. In the case of College A and College C, this is quite clearly marked close to the entrance of the library. In College B, the location is more difficult. Direct your question in this instance to the first service point you encounter on entering the library.
3. The timing of your questions should be approximately mid morning or mid afternoon. Try to avoid the lunch hour rush. Record the time you ask your question.
4. Ask your question of the library staff. Try to be as natural as possible. There are obviously problems in interpersonal relations in posing the reference question. Please therefore be consistent in the way you ask the question in each library. Volunteer additional information as to your identity, the purpose of your enquiry, and explanations only if requested.
5. Remember any questions you are asked and write them

APPENDIX B. (Cont'd)-General Instructions for Questioners

down after the reference interview is completed. Record also your replies.

6. Do not volunteer any more information than that given in the question. Don't be afraid to be silent. Be careful not to prompt the librarian or direct him/her to appropriate sources. This will be difficult in the personal situation. Be noncommital - use "mm" and "yes" strategically. On the other hand, don't overplay your act.
7. Note any published sources consulted. Note too any use of the catalogue, and record these details at the conclusion of the reference interview. Any use of nonpublished sources e.g. consultation of a colleague, use of the telephone should also be noted and recorded.
8. Accept any answer you are given. Repeat the answer to the librarian to ensure the accuracy. Record this answer faithfully as soon as possible.
9. All information should be recorded on the attached form before leaving the library.
10. If the librarian is unable to satisfy your enquiry immediately, do not offer to wait or call back. If you are given the choice, offer to wait. If the librarian persists in wanting to contact you, say that this is not possible, but that you will call back either in person or by phone (whichever suits you best). Do not give the librarian your home phone

APPENDIX B. (Cont'd)

General Instructions for Questioners (cont'd)

number, explaining that there is no-one at home to take the call, and that it would be more convenient for you to call back. Do not ask when to call back nor whom to ask for. If they do not suggest a time, call back in the afternoon if the question is asked in the morning, or the next morning if the question has been asked in the afternoon.

11. If there are any problems, do not hesitate to call me. During the day, I can be contacted at work on 467 2971. If I am not available, please leave a message with Anne Scotter. I can be contacted at home in the evenings on 43 2261.

12. The answer to some questions may be to direct you to another institution. Accept this answer without further prompting.

College A = (original instructions included identity and addresses of Colleges)

College B =

College C =

The questions will be tested at (name of College for pre-test) This can be done any time this week. Please report any problems to me.

13. IN ALL CASES, IF DIRECTED TO THE CATALOGUE, say I have already looked there but can't really find anything - sounding very vague.

APPENDIX C

Form for Collection of Data

COLLEGE LIBRARY REFERENCE STUDY

DATE:-

COLLEGE:-

QUESTION:-

TIME QUESTION ASKED:-

TIME QUESTION ANSWERED:-

REPLY:-

SOURCES USED:-

1. PUBLISHED SOURCES (if any)

2. UNPUBLISHED SOURCES (if any)

DID THE LIBRARIAN CONSULT THE CATALOGUE TO ANSWER YOUR QUESTION? YES NO

IF THE ANSWER TO THE ABOVE QUESTION WAS YES, UNDER WHAT HEADINGS DID THE LIBRARIAN CONSULT THE CATALOGUE?

DID THE LIBRARIAN ASK YOU ANY QUEST ON? YES NO

IF THE ANSWER TO THE ABOVE QUESTION WAS YES, WHAT WERE THE QUESTIONS, AND WHAT WERE YOUR REPLIES TO EACH ONE?

APPENDIX C (Cont'd)

College Library Reference Study (Cont'd)

WHAT DIRECTIONS WERE GIVEN TO YOU?

ADDITIONAL COMMENTS:-

LIBRARIAN'S ATTITUDE;-

NAME OF QUESTIONER:-

APPENDIX D1

Statistical Methodology-Success Rates

The hypothesis was tested using a students' "t" statistic[76] to evaluate the answers obtained to the ten questions used at each library.

For each library, the null hypothesis was that a user making a reference inquiry has an equal chance of getting a right or wrong answer,

$$H_0 : \mu = 5$$

(i.e. the population mean equals 5 after scoring the ten questions on a scale of 1 - 10 depending on the correctness of the answer)

Against

$$H_1 : \mu \neq 5$$

The t statistic was calculated as follows:-

$$t = \frac{\bar{x} - \mu}{s} \quad N-1$$

where

$\bar{x}$ = the sample mean

μ = the population mean (=5)

n = the sample size

s = the sample standard deviation

$$= \sqrt{\frac{N \ (x - \bar{x})^2}{n-1}}$$

76. SPIEGEL, M.R. Schaums outline of the theory and problems of statistics. N.Y., McGraw-Hill, 1961. pp.188 - 9.

APPENDIX D1 (Cont'd)

Statistical Methodology-Success Rates (Cont'd)

The results obtained are as follows. The scores used are those obtained on the Ramsden scale, with 5 added to bring the scores within a positive range of 0 - 10.

TABLE 15.

Statistical calculations for Scores

Question	Library A	Library B	Library C
1	4	4	8
2	4	5	10
3	5	8	5
4	5	10	2
5	8	8	8
6	4	10	2
7	5	4	5
8	5	4	4
9	8	4	5
10	4	10	8
$\bar{x}$	5.2	6.7	5.7
s	1.5491	2.7508	2.7101
t	0.387	1.854	0.775

At the 5% level of significance for 9 degrees of freedom (N-1) the null hypothesis should be accepted if t falls within the range

$$-2.26 < t < 2.26$$

APPENDIX D1 (Cont'd)

Statistical Methodology-Success Rates (Cont'd)

For each of the libraries tested, t falls within the range and the null hypothesis should be accepted. By accepting the null hypothesis at this confidence level, there is a 5% probability of making a type II error, that is, accepting the null hypothesis when it should be rejected.

The value of this statistic is limited by the small size of the samples used to test the hypothesis. As a result the 95% confidence intervals for each library's results fall within the following ranges.

TABLE 16.

Confidence Intervals.

Colleges	Intervals
A	5.5 $\pm$ 1.17 i.e. 4.33 - 6.67
B	6.7 $\pm$ 2.07 i.e. 4.63 - 8.77
C	5.7 $\pm$ 2.04 i.e. 3.66- 7.74

To test the performance of each library more properly statistically, and to make comparisons between the three libraries, larger banks of sample questions should be used in future studies.

APPENDIX D2

Statistical Methodology - Time Taken for Each Question.

The results obtained for each of the questions asked was compared with the time taken to answer the questions using CHI square (χ^2) statistic calculated from a contingency table (or two-way classification).

The following contingency table was prepared showing the frequency of different scores to each question in various time intervals.

TABLE 17

Time taken and Success

Time / Score	< 1	1 - 5	6 - 10	11 - 15	>15	Total Ni
0 - 2	2	0	0	0	0	2
3 - 4	0	8	0	1	0	9
5 - 6	0	5	0	0	1	7
7 - 8	0	4	2	0	1	7
9 -10	0	3	1	1	0	5
Total Nj	2	20	3	3	2	30

The χ^2 statistic was calculated according to the formula given below and then used to test the independence of the row and column classification.

$$\chi^2 = \sum_{i=1}^{R} \sum_{j=1}^{C} \frac{(N_{ij} - E_{ij})^2}{E_{ij}}$$

with (n-1) (c-1) degrees of freedom, where

N_{ij}= the frequency or number of observations occurring in cell ij

E_{ij}= the expected number of observations when classifications are independent (i.e.

APPENDIX D2.

Statistical Methodology Time Taken for Each Question (Cont'd).

row and column factors are independent)

$$= \frac{(N_i \times N_j)}{N}$$

where

N_i = total frequency in the i-th row

N_j = total frequency in the j-th row

N = total number of cells $(R \times C)$

The null hypothesis tested was

H_0 : The results are independent of the time taken.

and conversely,

H_1 : The time taken to answer and the results are related

At the 5% level of significance for 16 degrees of freedom,

$$\chi^2_{.95} = 26.3 \quad (16DF)$$

The null hypothesis should be rejected if the chi square statistic calculated from the above data is greater than this value.

Using the above data $\chi^2 = 38.69$

Therefore the null hypothesis is rejected and the hypothesis that the results obtained are dependent on the time taken to answer must be accepted. The value of this result is limited by the size of the sample.

The source of this statistical analysis is the Applied Statistics Handbook for the Texas Instruments TI59 programmable calculator.

APPENDIX E

Attitudes Reported by the Questioners

		Score
Question 1		
College A.	She was obviously in a hurry to get back to the circulation desk.	N
College B.	Helpful - she didn't overpower me with information. If I had wanted more I would have had to ask for it.	N
College C.	Friendly, helpful	P
Question 2		
College A.	O.K. but not very interested in making sure you got the material you wanted	N
College B.	Efficient (she was somewhat suspicious) and helpful. Could have been more friendly.	N
College C.	Helpful (but not very hopeful about finding material).	P
Question 3		
College A	The College term had finished. I was the only person in the library, but the librarian was too busy chatting to her friends to really be bothered with me.	N
College B	Extremely helpful - wanted to ensure that I found what I was looking for.	P
College C	Non-commital. I felt she had something else to get back to whilst she was talking to me.	N

APPENDIX E. (Cont'd)

Attitudes Reported by the Questioners (Cont'd)

Question 4.	Score
College A. Helpful, but reserved	P
College B. Matter-of-fact	N
College C. (No library staff attempted the question)	

Question 5.

College A. She was surprised at the question. She helped but did not go to great lengths ...She apologised for not being able to give a definite answer or further help N

College B. They all shied away. They had no idea where to look. When I told them it was an argument between a friend and myself they just nodded. I don't feel this had a great effect on their lack of search, for they didn't consult any books in the first place. However, when the woman told me to go to C.S.I.R.O.she did say- if you really want to know go there. N

College C. The librarian was very keen to help.She thought it was the "best" reference question she had. She told other people about it who also helped. When she glanced through the material she looked at me and didn't just push a lot of books on to me and tell me to look. She seemed as if she really wanted to find an answer for it. P

APPENDIX E. (Cont'd)

Attitudes Reported by the Questioners (Cont'd)

Question 6.		Score
College A.	Did not check whether I was satisfied with the answer she had found	N
College B.	Very efficient and helpful. I must add after wandering in the front door I was standing around looking for the reference desk when the librarian bounded over and asked if she could help me!	P
College C.	"None of my business" attitude. I'm only a clerical assistant.	N
Question 7.		
College A.	I had a feeling that the tinkle of tea cups drew her back to her two colleagues in the staff room.Any interest seemed to be dissipated by the sound of afternoon tea.	N
College B.	Not very interested, although I felt that this interpretation was me interpreting her inadequacy.	N
College C.	Traditionally helpful when I asked question but (to me) practically unhelpful in wanting or expecting to have to give me more than she did	P

APPENDIX E. (Cont'd)

Attitudes Reported by the Questioners (Cont'd)

Question 8.	Score
College A. First librarian didn't seem at all interested. Second librarian much more interested.	N
College B. Didn't take long to answer question, but seemed interested in trying to help.	P
College C. Seemed to want to help.	P
Question 9.	
College A. Seemed very helpful.	P
College B. Not helpful, effort to move.	N
College C. Very helpful	P
Question 10	
College A. Disinterested	N
College B. Very interested and helpful. When she sent me to the State Library I felt it was because she really thought it would be a reasonable solution	P
College C. All right, but didn't extend herself.	N